

The millipede genus *Tasmaniosoma* Verhoeff, 1936 (Diplopoda, Polydesmida, Dalodesmidae) from Tasmania, Australia, with descriptions of 18 new species

Robert Mesibov

Queen Victoria Museum and Art Gallery, Launceston, Tasmania 7250, Australia

urn:lsid:zoobank.org:author:24BA85AE-1266-494F-9DE5-EEF3C9815269

Corresponding author: *Robert Mesibov* (mesibov@southcom.com.au)

Academic editor: *Sergei Golovatch* | Received 28 February 2010 | Accepted 17 March 2010 | Published 26 March 2010

urn:lsid:zoobank.org:pub:FC5CFE57-05F9-4685-BC02-BB82AB9E4894

Citation: Mesibov R (2010) The millipede genus *Tasmaniosoma* Verhoeff, 1936 (Diplopoda, Polydesmida, Dalodesmidae) from Tasmania, Australia, with descriptions of 18 new species. ZooKeys 41: 31–80. doi: 10.3897/zookeys.41.420

Abstract

Tasmaniosoma armatum Verhoeff, 1936 is redescribed from topotypical specimens and the following congeners are described from Tasmania: *T. alces* sp. n., *T. aureorivum* sp. n., *T. australe* sp. n., *T. barbatulum* sp. n., *T. bruniense* sp. n., *T. cacophonix* sp. n., *T. clarksonorum* sp. n., *T. compitale* sp. n., *T. decussatum* sp. n., *T. fasciculum* sp. n., *T. fragile* sp. n., *T. gerdiorivum* sp. n., *T. hesperium* sp. n., *T. hickmanorum* sp. n., *T. laccobium* sp. n., *T. maria* sp. n., *T. orientale* sp. n. and *T. warra* sp. n.

Keywords

Diplopoda, Polydesmida, Dalodesmidae, millipede, Australia, Tasmania, parapatry

Introduction

The rich dalodesmid fauna of Tasmania includes many species with a “head + 19 rings” (H+19; head + 17 podous rings + 1 apodous ring + telson) and high, prominent paranota with rounded posterior corners.

I placed six species from this assemblage in the new genus *Atrophotergum* Mesibov, 2004 because they share several apomorphies: solenomere arising from a large,

mediolaterally flattened posterior process on the gonopod telopodite; unusually large size difference between tergites 3 and 4 and more posterior metatergites; and paired, sometimes finger-like processes on the sternites of the last few rings (Mesibov 2004). Another three species in the assemblage have a remarkable pseudo-articulated gonopod telopodite (Mesibov 2005) and were grouped in *Ginglymodesmus* Mesibov, 2005.

Most of the remaining species in the H+19 assemblage are not so easily sorted into genera. Many have short, rod-like gonopod telopodites tipped with a closely packed cluster of processes of varying sizes and shapes. In this paper I assign 18 of the larger undescribed species of this kind to the formerly monotypic *Tasmaniosoma* Verhoeff, 1936. Relationships within this expanded *Tasmaniosoma* are considered in the Discussion section, below.

Tasmaniosoma armatum Verhoeff, 1936 and its congeners are long-legged, often quick-running and sometimes brightly coloured millipedes (Fig. 1) with an apparent preference for eucalypt forest. Adults of most species are usually found in moist (not wet) leaf and bark litter, or under bark on standing trees. They are only rarely found in the soil or inside rotting logs, and they are more abundant in patches of open forest, woodland and scrub than in closed, shady forest in the same area. Adults can be collected throughout the year but can be difficult to find in the austral summer, when forest litter dries out.

The genus *Tasmaniosoma* as circumscribed here is very widely distributed in Tasmania and may have been nearly ubiquitous before European settlement. Several of the new species have small known ranges (<2000 km²) and more small-range species may remain to be discovered. As with *Atrophotergum* spp. (Mesibov 2004), some *Tasmaniosoma* spp. are distributed in mosaic parapatry (see below and Mesibov, in preparation).

Methods

“Male” and “female” in the text refer to stadium VII adults. Many females and juveniles possibly referable to *Tasmaniosoma*, but not collected together with males, remain unidentified. All identified specimen lots are listed in the Appendix; only holotype and paratype lots are detailed in the main text.

The most complete description below is given for *T. armatum*. New species descriptions refer mainly to character states which clearly differ from those in the type species. All reported *T. armatum* characters were checked in the new species except gonocoxa shape and setation, and microscopic details of the sphaerotrichomes, spinnerets and limbus.

Shorthand descriptions are given below for characters of the the ring 6 sternite in males (Fig. 5). In some species the lateral edge of the sternite is extended ventrally as a flat tab pressed against the leg 6 coxa; this tab may or may not bear setae. Most species also have a similar tab by the leg 7 coxa with considerable variation between species in size, shape and setation. The anterior margin of the ring 6 sternite may or may not bear setae, which may or may not be elevated on sternal protuberances. These ring 6 structures are likely to assist males in protecting or orienting their gonopod telopodites.

Locality details in the text are given in all cases with latitude and longitude based on the WGS84 datum. Most localities also have a UTM grid reference (grid zone 55G, datum AGD66), because these are the coordinates most often written on 20th century specimen labels in Tasmania.

Specimens are preserved in 80% ethanol. Gonopods were cleared when necessary in 80% lactic acid and temporarily mounted in 60% lactic acid for microscopic examination. Other body parts were temporarily mounted in a 1:1 glycerine:water mixture. Preliminary drawings on graph paper were made using an eyepiece grid at 64× or 160× on a binocular microscope. Photomicrographs were taken with a Canon EOS 1000D digital SLR camera mounted on a Nikon SMZ800 binocular dissecting microscope equipped with a beam splitter. Measurements were made with the same microscope using an eyepiece scale. An FEI Quanta 600 ESEM operated in high-vacuum mode was used to examine preserved material which had been air-dried before sputter-coating with gold. Material from species represented by only a few specimens was air-dried for a few minutes, examined in low-vacuum mode on the ESEM and returned immediately afterwards to alcohol. All images and drawings were prepared for publication using GIMP 2.6 software.

Abbreviations: QVM = Queen Victoria Museum and Art Gallery, Launceston; Tas = Tasmania; ZSM = Zoologische Staatssammlung München.

Results

Order **Polydesmida** Pocock, 1887

Suborder **Dalodesmidea** Hoffman, 1980

Family **Dalodesmidae** Cook, 1896

Tasmaniosoma Verhoeff, 1936

Tasmaniosoma Verhoeff, 1936:11. Attems, 1940:442. Jeekel, 1971:355; 1982:12; 1983:146; 1984:85; 1985:52. Hoffman, 1980:150,185.

Type species. *Tasmaniosoma armatum* Verhoeff, 1936, by monotypy.

Tasmaniosoma armatum Verhoeff, 1936

Figs 1A, 2, 3C, 4B, 5A, 6A, 6B, 7A; map Fig. 23

Tasmaniosoma armatum Verhoeff, 1936:12, Figs 3–8. Attems, 1940:443, Figs 630, 631. Jeekel, 1971:355; 1984:85.

Syntypes. Two males, Australia, Tasmania, Lake Leake, G.E. Nicholls, date not known, ZSM A20033578, A20033579, A20052437 (see Remarks).



Figure 1. **A** Living male *Tasmaniosoma armatum* Verhoeff, 1936. Image by Hans Henderickx, used with permission. **B–I** Dorsal views of midbody rings and left lateral views of midbody ring of freshly killed *T. clarksonorum* sp. n. male, QVM 23:51683 (**B, F**); *T. compitale* sp. n. female, QVM 23:51680 (**C, G**); *T. fasciculum* sp. n. male, QVM 23:51665 (**D, H**); and *T. hickmanorum* sp. n. male, QVM 23:51681 (**E, I**). **A–I** not to same scale. Pigmentation of the four species in **B–I** fades progressively in alcohol and long-preserved specimens may be colourless. The whitish patch (**p**) below the paranotal margin in *T. compitale* sp. n. **G** and the whitish patches dorsally **C** change to light yellow in freshly preserved specimens (ca 1–10 weeks in alcohol).

Other material examined. 153 males, 128 females and 4 stadium VI males from 128 unique localities (see Appendix).

Diagnosis. Metatergites without tubercles; ring 6 sternite with discrete setal brushes on anterior margin; gonopod telopodite with stout, rod-like setae in longitudinal

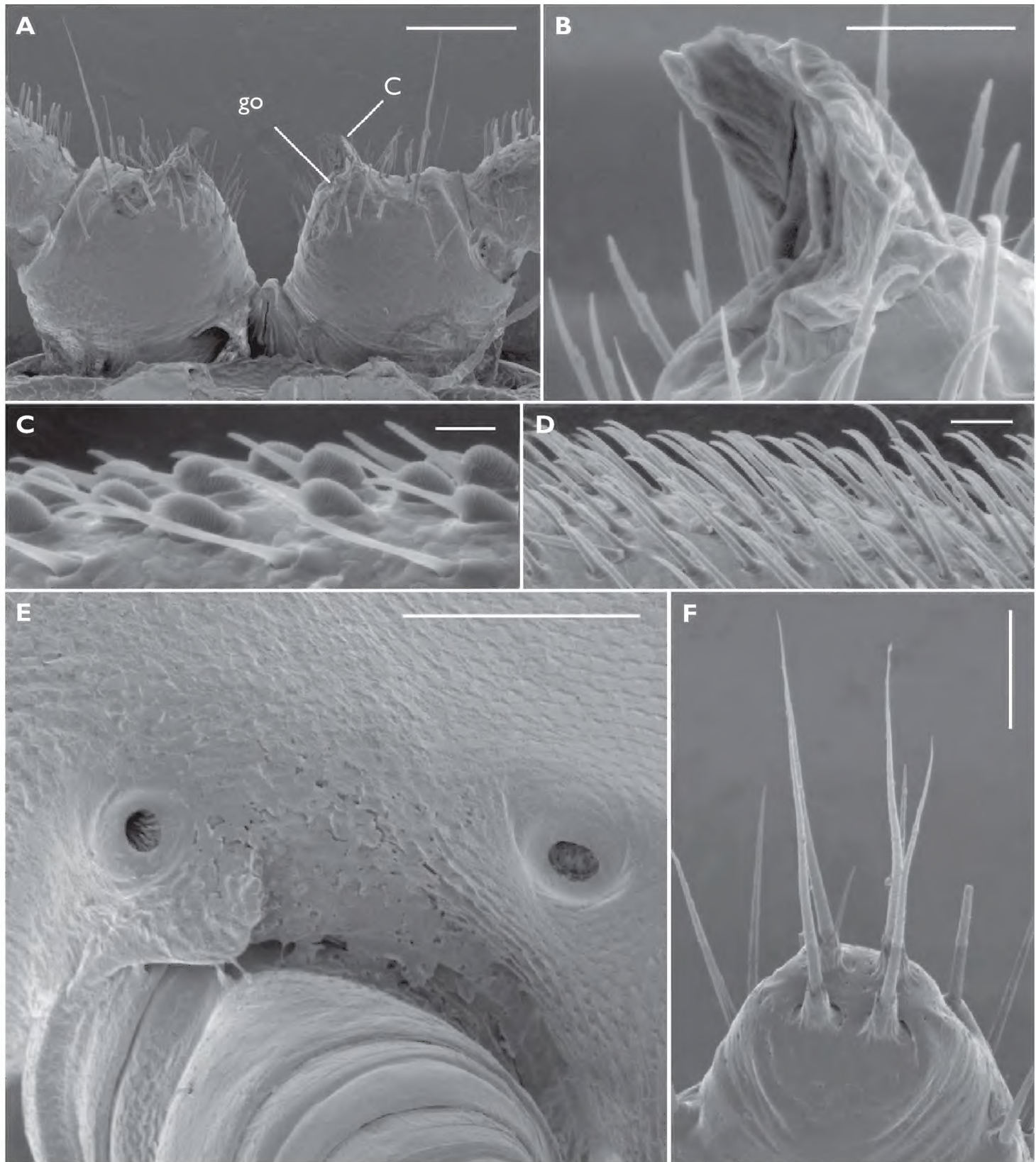


Figure 2. *Tasmaniosoma armatum* Verhoeff, 1936 male (ex QVM 23:46567). **A** Leg 2 bases, posterior view, showing position of gonopore (**go**) and cowl (**c**) **B** enlargement of cowl on left leg 2 coxa **C** sphaerotrichomes on leg 6 postfemur **D** brush setae on leg 6 prefemur **E** spiracles on midbody ring, left lateral view, anterior to left **F** spinnerets, ventral view. Scale bars **A, E** = 0.1 mm **F** = 0.05 mm **B** = 0.025 mm **D** = 0.02 mm **C** = 0.01 mm.

tract on posteromedial surface and two upright (distally directed), Y-shaped processes arising anterolaterally near apex.

Description. The following description is based on nine males and 10 females from the type locality (in QVM 23:46547, 23:46548 and 23:46567).

Male/female approximate measurements: length 14/14 mm, ring 12 paranota width 1.7/1.7 mm. Body, head and antennae uniformly dark reddish-brown in life

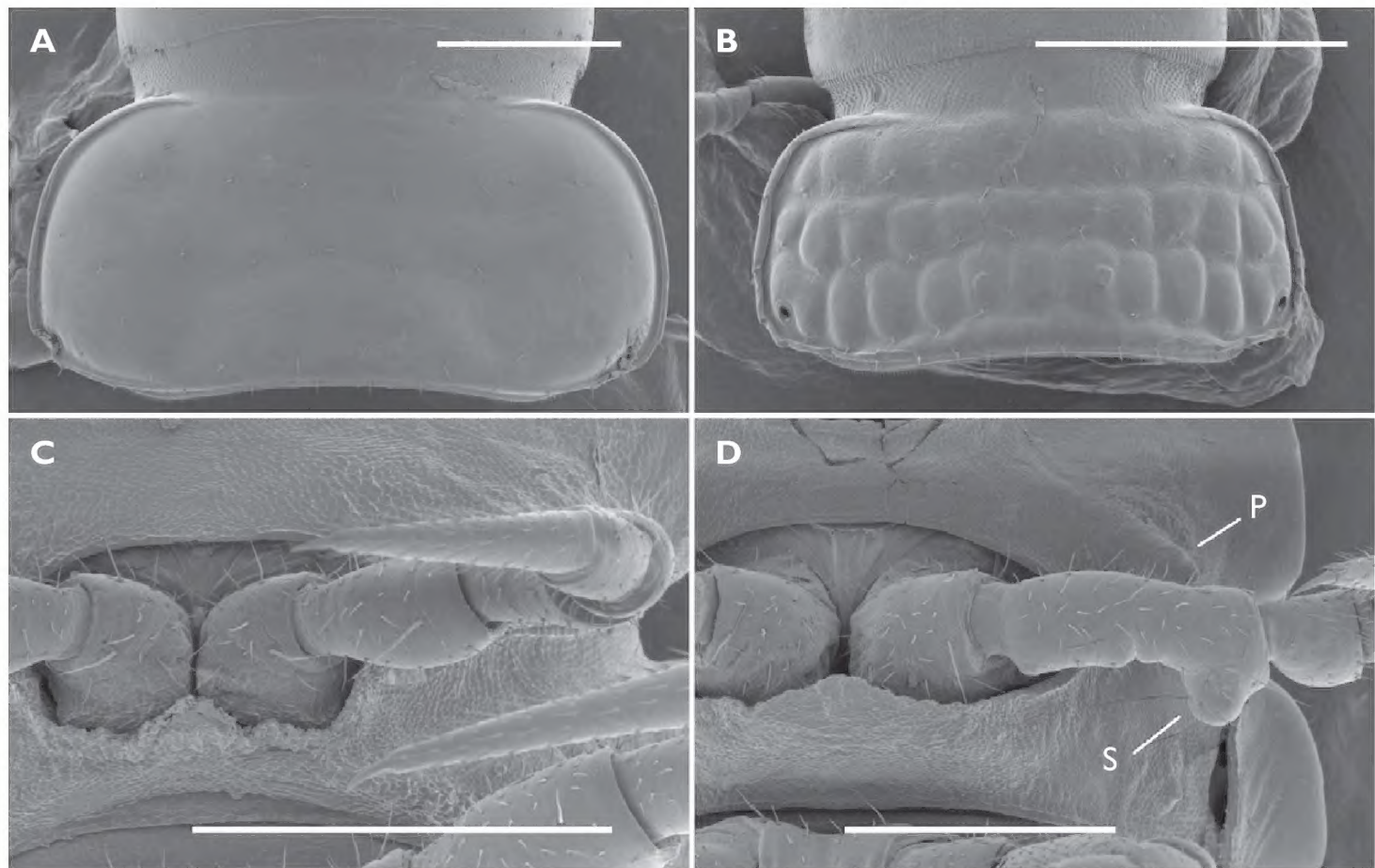


Figure 3. **A, B** Dorsal views of ring 12 metatergite of **A** *Tasmaniosoma warra* sp. n., paratype male QVM 23:46038, showing smooth surface, and **B** *T. barbatulum* sp. n., paratype male ex QVM 23:51512, showing three transverse rows of large, low, contiguous tubercles. **C, D** Ventral views of legpair 2 of **C** *T. armatum* Verhoeff, 1936, topotypical female ex QVM 23:46567, and **D** *T. australe* sp. n., paratype female ex QVM 23:46575, showing prefemoral swelling (**s**) and peg-like projection (**p**). Scale bars = 0.5 mm.

(Fig. 1A), legs pinkish-red basally and darker distally; head and leg colour fades in alcohol, but body colour persists for many years.

Male with head moderately setose anteriorly, vertex sparsely setose; sockets slightly impressed, separated by ca $2 \times$ socket diameter; antennal groove deep laterally. Antenna slender, slightly clavate, when manipulated reaching back to ring 3; antennomere 6 widest, relative antennomere lengths $(2,3) > 6 > (4,5)$. Collum from above reniform, convex anteriorly; corners rounded. Tergites 2–4 distinctly narrower than more posterior metatergites; overall widths tergite $6 > 5 > 4 > (3, \text{head}) > 2 > \text{collum}$; rings 6–15 about the same width. In lateral view, margin of ring 2 tergite slightly lower than margins of collum and ring 3 tergite. Ring 2 ventrally on either side with fairly shallow pit (Fig. 4B), rim well defined anterolaterally but not medially or posteriorly. Ring suture and waist distinct on diplosegments, no longitudinal striations on waist; prozonites smooth; transverse furrow indistinct, metatergite smooth, not sculptured, with three transverse rows of ca 12 small setae: two rows anterior to transverse furrow, one close to posterior margin of metatergite; posterior metatergal margin slightly emarginate medially. Limbus composed of flat tabs, irregularly notched distally. Midbody paranota ca $1.5 \times$ as wide as prozonite, slightly inflated, marginal groove distinct, anterior corner smoothly convex, posterior corner smoothly convex without projecting posteriorly on any rings, but with 2–3 very small tooth-like irregularities,

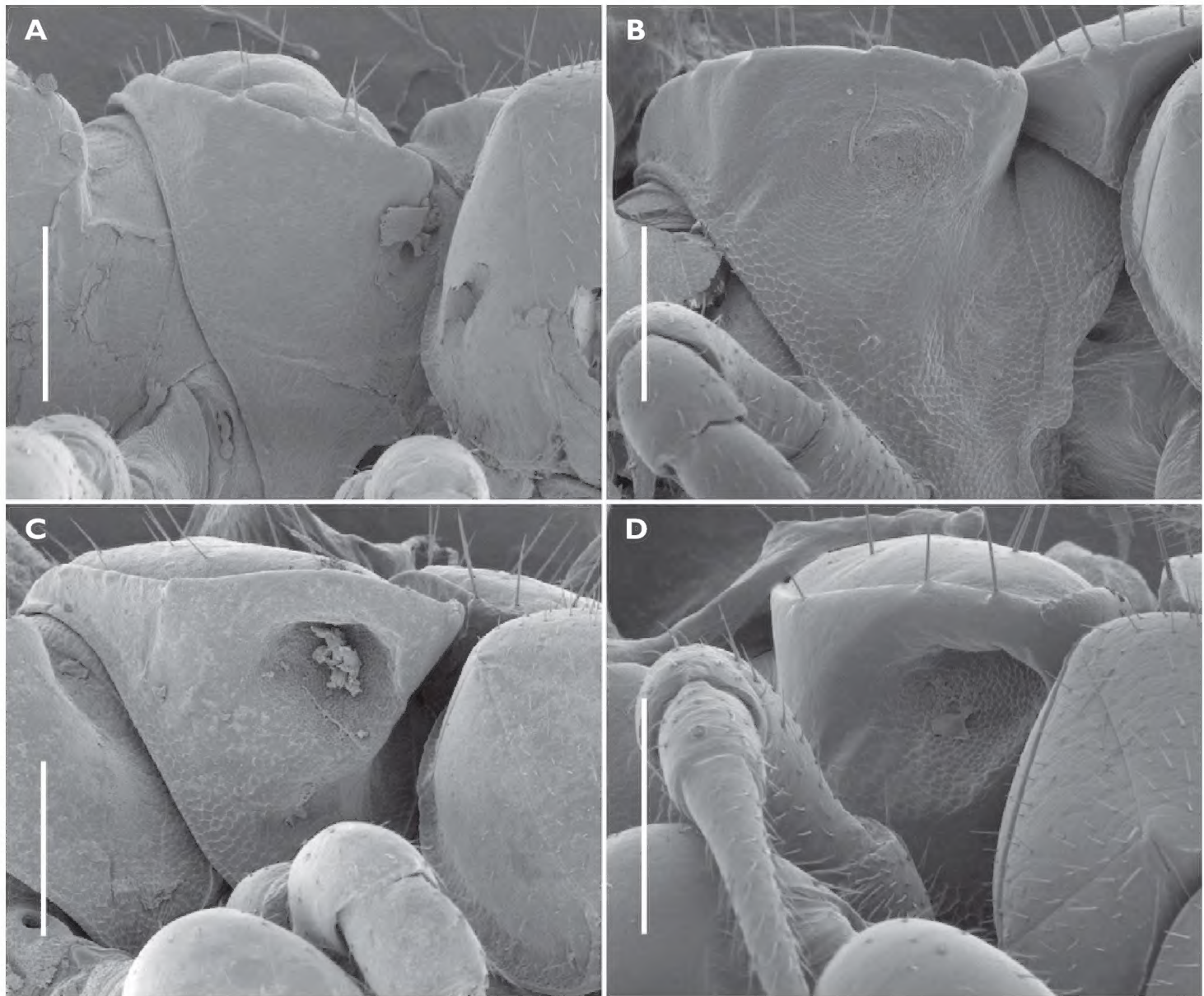


Figure 4. Male ring 2, ventral view of right side (anterior to right) showing variation in structure. **A** *Tasmaniosoma compitale* sp. n., paratype male QVM 23:45970, pit not apparent **B** *T. armatum* Verhoeff, 1936, topotypical male ex QVM 23:46567, pit fairly shallow, not well defined medially and posteriorly **C** *T. cacophonix* sp. n., voucher male ex QVM 23:46724, pit deep, small **D** *T. decussatum* sp. n., male paratype ex QVM 23:46699, pit deep, large. Scale bars = 0.2 mm.

each bearing small seta; lateral margin very slightly convex, in lateral view slightly oblique (anterior lower) at ca 2/3 ring height. Midbody metatergites ca $2.2 \times$ as wide as long. Pore formula 5, 7, 9, 10, 12, 13, 15–18; ozopore small, round, opening dorsolaterally close to margin near posterior corner of paranotum. Spiracle small, round, opening on short, crater-like elevation; on diplosegments anterior spiracle just above and anterior to first leg, posterior spiracle about midway between leg bases (Fig. 2E). Sternites moderately setose, as wide as long, transverse impression deep, longitudinal impression indistinct. Anterior legs with prefemur greatly swollen dorsally, femur less so (Figs 6A, 6B); swellings begin leg 3, gradually decrease to leg 15; tarsus long, slightly curved, ca $1.6 \times$ as long as femur on anterior legs, but proportionally shorter posteriorly; relative podomere lengths tarsus > (prefemur, femur) > (postfemur, tibia). Sphaerotrichomes on 3–4 most distal podomeres, shafts tapered (Fig. 2C). Brush setae on distal end of coxa/trochanter, prefemur, base of femur; brush setae unbranched, tapering (Fig. 2D). Gonopore on distomedial bulge of leg 2 coxa, pro-

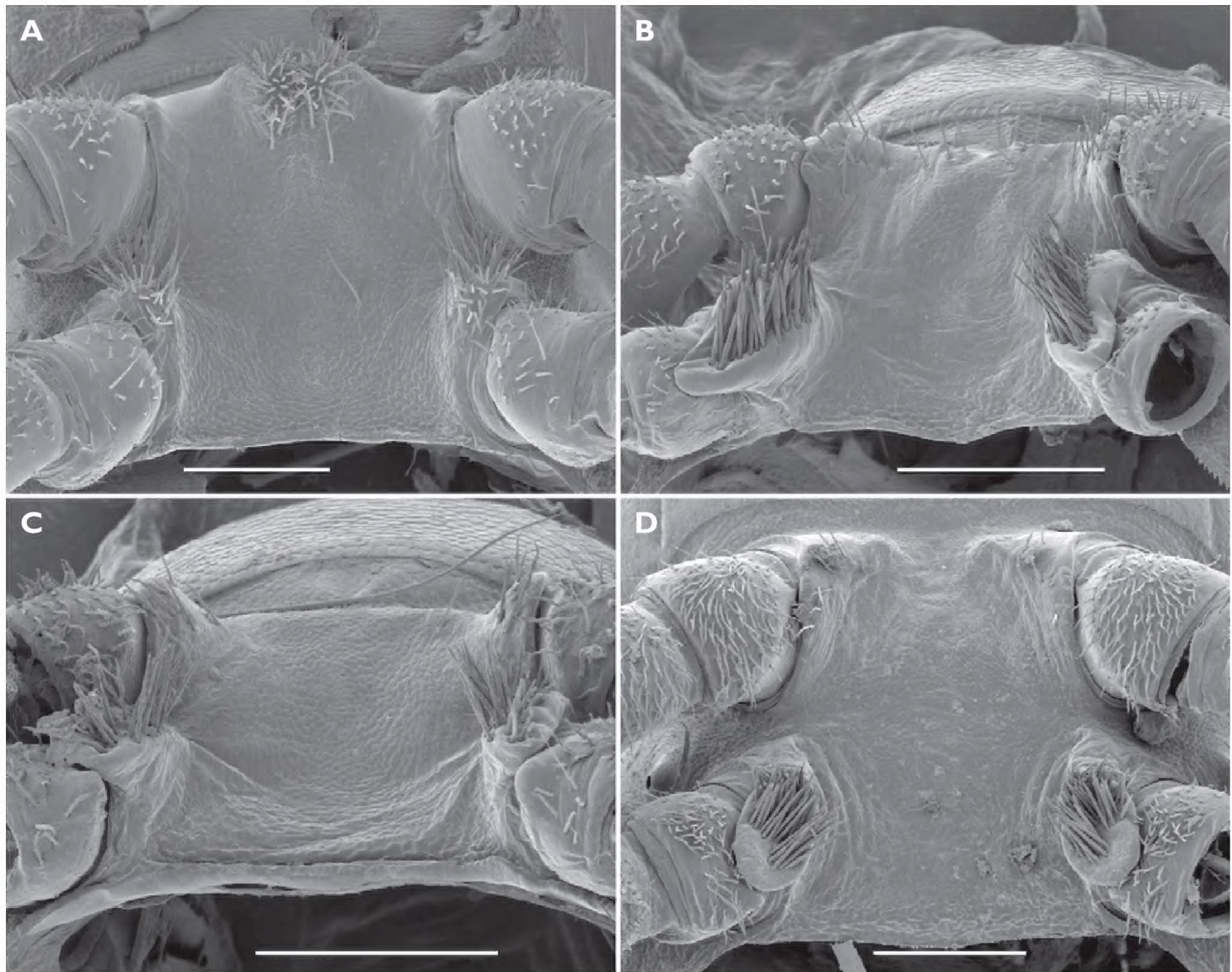


Figure 5. Male ring 6, ventral view (anterior to top) showing variation in structure. **A** *Tasmaniosoma armatum* Verhoeff, 1936; no leg 6 tab; short, thin leg 7 tab with brush of fine setae; paired and raised brushes of fine setae medially on anterior margin of sternite **B** *T. barbatulum* sp. n.; short leg 6 tab with a few fine setae; long, thickened leg 7 tab with brush of stout setae; a few scattered setae on anterior margin **C** *T. fasciculum* sp. n.; short leg 6 tab with a few fine setae; long, thickened leg 7 tab with brush of stout setae; no setae on anterior margin **D** *T. hickmanorum* sp. n.; no leg 6 tab; long, thickened leg 7 tab with brush of stout setae; anterior margin with wide median notch. Scale bars = 0.2 mm.

tected by thin cowl (Figs 2A, 2B). Short brushes of fine setae on sternite between legpairs 3, 4 and 5. Leg 6 and 7 bases (Fig. 5A) well- and equally separated; no leg 6 sternal tab; leg 7 tab short, thin, with brush of fine setae; anterior edge of sternite medially with paired, conjoined brushes of fine setae on low protuberance. Pre-anal ring moderately setose; hypoproct subtrapezoidal; epiproct from above tapering smoothly to rounded tip, extending slightly past anal valves. Spinnerets (Fig. 2F) in square array; setae with tightly-fitting basal sheaths; dorsal setae unprotected, ventral setae in shallow depression.

Gonopod aperture ovoid, ca 1/2 as wide as ring 7 prozonite, posterolateral margins raised. Telopodites straight, parallel but slightly divergent apically; extending nearly to leg 5 bases when retracted. Gonocoxa short (ca 1/3 length of telopodite), more or less truncated-conical with anterior side longer than posterior; lateral surface projected distally as rounded lobe pressed to telopodite base, medial surface slightly projected

distally; with sparse long setae distally on posterolateral surface. Gonocoxae weakly joined distomedially. Cannula prominent, inserting basomedially in depression on telopodite. Telopodite (Fig. 7A) a distally tapering cylinder with setose base protruding posteriorly as rounded lobe; with small, discrete, setose bump on anteromedial side of base; and with buttress-like ridge on anterolateral surface from articulation with gonocoxa to ca 1/3 telopodite height. Numerous minute setae near cannula insertion; fine, tapering setae on telopodite base, on posterolateral surface and in longitudinal row of three long setae on lateral surface at about half telopodite height. Telopodite also with narrow, discrete zone of 30–40 stout, rod-like setae on posteromedial surface from ca 1/3 to 2/3 telopodite height; these setae often broken or broken away, but sockets always visible. Apex of telopodite with cluster of six major processes, labelled here and in Fig. 7A from lateral to medial:

- (1) broad Y-shaped process flattened anteroposteriorly, divided at 1/3 to 1/2 the process height, the two tips acute ['ta1' of Verhoeff (1936)];
- (2) similar, slightly smaller, less deeply divided process ['ta2'];
- (L) laminate process resembling bird's head in profile, flattened mediolaterally, broadly curved distally with posterior, hook-like extension ['ti'];
- (S) short, thorn-like solenomere curving posteromedially ['sl'];
- (3) short process possibly continuous with solenomere, divided into posterolaterally directed tab with rounded tip, and posteromedially directed rod with several apical teeth ['n'];
- (4) thin, rod-like process arising posteromedially below the telopodite apex and bending very slightly posteriorly, with a flattened tip ['psl'].

In addition, very short finger-like process arising just lateral to process 3 and directed posterolaterally. Prostatic groove curving first anteriorly, then posteriorly from base and running more or less directly to solenomere, passing posterior to base of process 4.

Female as large as male or slightly smaller, legs more slender and prefemora and femora not swollen, sternites ca 1.2 × as wide as long. Epigynum ca 1/3 width of ring 2, posterior margin produced medially as small, rounded triangle (Fig. 3C). Cyphopods not examined.

Distribution. Common and sometimes locally abundant in eucalypt forest over ca 25 000 km² in central and eastern Tasmania from sea level to at least 960 m elevation, including Schouten and Maria Islands and Forestier and Tasman Peninsulas, but absent from much of the inland northeast (Fig. 23).

T. armatum is parapatric with *T. hickmanorum* sp. n. in the west of its range, notably along the Tasmanian biogeographical divide known as the Mersey Break (Mesibov 1999), and is sympatric or parapatric with *T. clarksonorum* sp. n. and *T. gerdiorivum* sp. n. along the East Tamar Break (Mesibov 1994, 1997). It may be parapatric with *T. orientale* sp. n. in the Eastern Tiers.

T. armatum may have been introduced to Tasmanian localities outside its natural range. Adults are often found under loose eucalypt bark, and might be carried from place to place in shipments of logs and firewood. For example, the specimen in Fig. 1A

was collected in 2007 at Tahune Forest Reserve in southern Tasmania, well within the range of *T. warra* sp. n. and well outside the main range of *T. armatum*. Another specimen was found near Tahune Bridge in the Reserve in 1994. Tahune Forest Reserve is a much-visited tourist attraction and the road through the Reserve has been used by log-carting vehicles for many years.

Remarks. Verhoeff (1936, p. 14) thanks “Prof. Nicholls an der University of Western Australia, Perth-Crawlay [Crawley]” for material from Lake Leake. George Edward Nicholls was Professor of Biology at the University of Western Australia from 1921 to 1947. He is known to have visited Tasmania in 1928, 1929 and 1939 (Nicholls 1943, p. 142) and it is likely that *T. armatum* was collected during one of the first two visits.

The type material was located by Dr Jörg Spelda and imaged by him at my request. It consists of three registered museum lots. A20033578 is a slide mount with disarticulated legs, antennae, metatergites and right and left gonopods. From images of this mount it is clear that Verhoeff used this slide to draw his Figs 3 and 4 (leg 3) and Figs 7 and 8 (medial views of left gonopod). A20033579 is a slide mount with a leg, a ring 7 metatergite and a joined pair of gonopods. The latter were used by Verhoeff for his Figs 5 and 6 (posterior view of left gonopod). Verhoeff’s description is thus based on two males. A20052437 consists of two male trunk pieces in alcohol (dried out at some time in the past). The original label has been lost but the pieces are likely to be from the two males dissected by Verhoeff for the slide mounts. Only one of the slide mount labels, for A20033578, specifies Lake Leake, Tasmania, but since Verhoeff used both slides for his description and does not mention another locality, it is also likely that both males illustrated were from Lake Leake.

The gonopod drawings (Figs 5–8) in Verhoeff (1936) are clear and accurate, but Verhoeff offers no evidence for the homologies he proposes for the apical processes on the telopodite, and I am reluctant to use his names for these processes.

T. armatum varies very little over its large range in colour and morphological details. Specimens from lower elevations tend to be slightly larger, to ca 15 mm in length.

***Tasmaniosoma alces* sp. n.**

urn:lsid:zoobank.org:act:10C7B840-CBC0-45C1-89FF-67A67B1A7296

Figs 6F, 6G, 7B; map Fig. 24

Holotype. Male, Australia, Tasmania, NW of Triabunna, 42°27'50"S 147°54'56"E ±25 m, 100 m, 25 August 2009, R. Mesibov, QVM 23:51552.

Paratypes. 3 males, Salmons Creek, Tas, 42°28'57"S 147°50'54"E (EN696961) ±100 m, 150 m, 17 April 1991, R. Mesibov, QVM 23:46762.

Other material. None known.

Diagnosis. Metatergites without tubercles; ring 6 sternite with discrete setal brushes on anterior margin; gonopod telopodite with stout, rod-like setae in longitudinal tract on posteromedial surface and large, fishtail-shaped process arising at about 3/4 telopodite height and directed laterally.

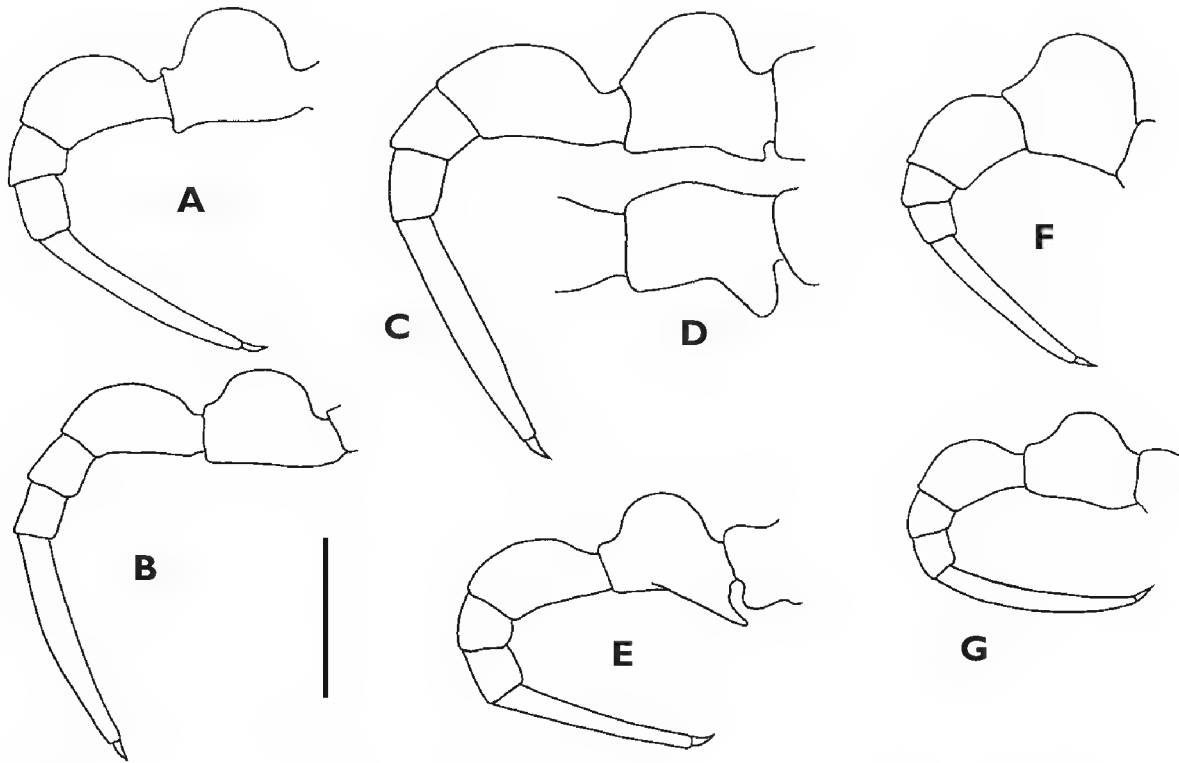


Figure 6. *Tasmaniosoma armatum* Verhoeff, 1936, topotypical male ex QVM 23:46567, legs 6 **A** and 7 **B**. *T. australe* sp. n., voucher male QVM 23:46573, left leg 6 lateral **C** and dorsal view **D**. *T. brunniense* sp. n., paratype male ex QVM 23:51633, left leg 6 **E**. *T. alces* sp. n., paratype male ex QVM 23:46762, legs 6 **F** and 7 **G**. Setation not shown; scale bar = 0.5 mm.

Description. Male ca 16 mm long; ring 12 paranota width ca 1.5 mm. Live colour as for *T. armatum*; in alcohol, decoloured with traces of reddish pigmentation distally on legs, antennae and paranota.

Most non-gonopodal details as for *T. armatum*, but relative widths tergite 6>5>head>(3,2)>collum; ring 12 paranota 1.3 × as wide as prozonite; leg 6 with prefemur unusually swollen, i.e. more so than leg 5 or 7 (Figs 6F, 6G); relative podomere lengths tarsus>prefemur>femur>(postfemur, tibia); leg 6 tarsus 1.7 × as long as femur. Ring 6 sternite with legs 6 a little closer together than legs 7; leg 6 tab short, without setae; leg 7 tab long, thin, with rounded knob anterodistally bearing numerous fine setae pointed in all directions; anterior margin of sternite medially with brush of fine setae on low protuberance, i.e. as in *T. armatum* but without evident separation into paired conjoined brushes.

Gonopod telopodite similar to that of *T. armatum*, but process 2 topologically replaced by flat, broadly round-tipped tab curving anteromedially and closely applied to anterior surface of laminate process; the latter broadly round-edged, without hook-like posterior extension. Solenomere flattened mediolaterally and bifid; distal branch bearing the end of the prostatic groove, acute, curving medially; basal branch acute. Process 4 bent posteriorly at ca 45° angle. In addition, large, fishtail-shaped process arising posterolaterally at ca 3/4 telopodite height and directed laterally, the concave outer edge variably toothed. Posteromedial row of short, stout setae from ca 1/3 to 2/3 telopodite height, frequently broken off. Longitudinal lateral setal row with 4–8 setae.

Female not yet recognised.



Figure 7. A *Tasmaniosoma armatum* Verhoeff, 1936, topotypical male ex QVM 23:46567 **B** *Tasmaniosoma alces* sp. n., paratype male ex QVM 23:46762. Left posteroventral views of gonopods in situ, showing solenomere **S**, lamine process **L** and processes numbered in text. Medial bend in lamine process on *T. alces* telopodite is a preparation artifact. Scale bars = 0.2 mm.

Distribution. Known from two sites ca 6 km apart in dry eucalypt forest north-west of Triabunna on the east coast of Tasmania (Fig. 24). Possibly sympatric with *T. armatum*, which has been found ca 2 km from one of the *T. alces* sites.

Etymology. Latin *alces*, “elk”, noun in apposition. The gonopods in situ remind me of the head of a male elk with antlers.

***Tasmaniosoma aureorivum* sp. n.**

urn:lsid:zoobank.org:act:CFA149D3-3B8C-4425-A626-E3FC5BACC621

Fig. 8; map Fig. 24

Holotype. Male, Australia, Tasmania, Gold Creek, 42°47'41"S 146°35'04"E (DN659617) ±100 m, 570 m, 24 February 1994, R. Mesibov, QVM 23:46599.

Paratypes. 3 males, 3 females, Growling Swallet, Junee-Florentine karst, Tas, 42°41'S 146°30'E (DN590735) ±1 km, 26 March 1989, S. Eberhard, Glowworm Chamber, field no. JF36-10, QVM 23:12120; 1 male, Ray Benders Cave, Risbys Basin, Junee-Florentine karst, Tas, 42°46'11"S 146°36'15"E (DN675645) ±1 km, 10 June 1992, S. Eberhard, QVM 23:12972.

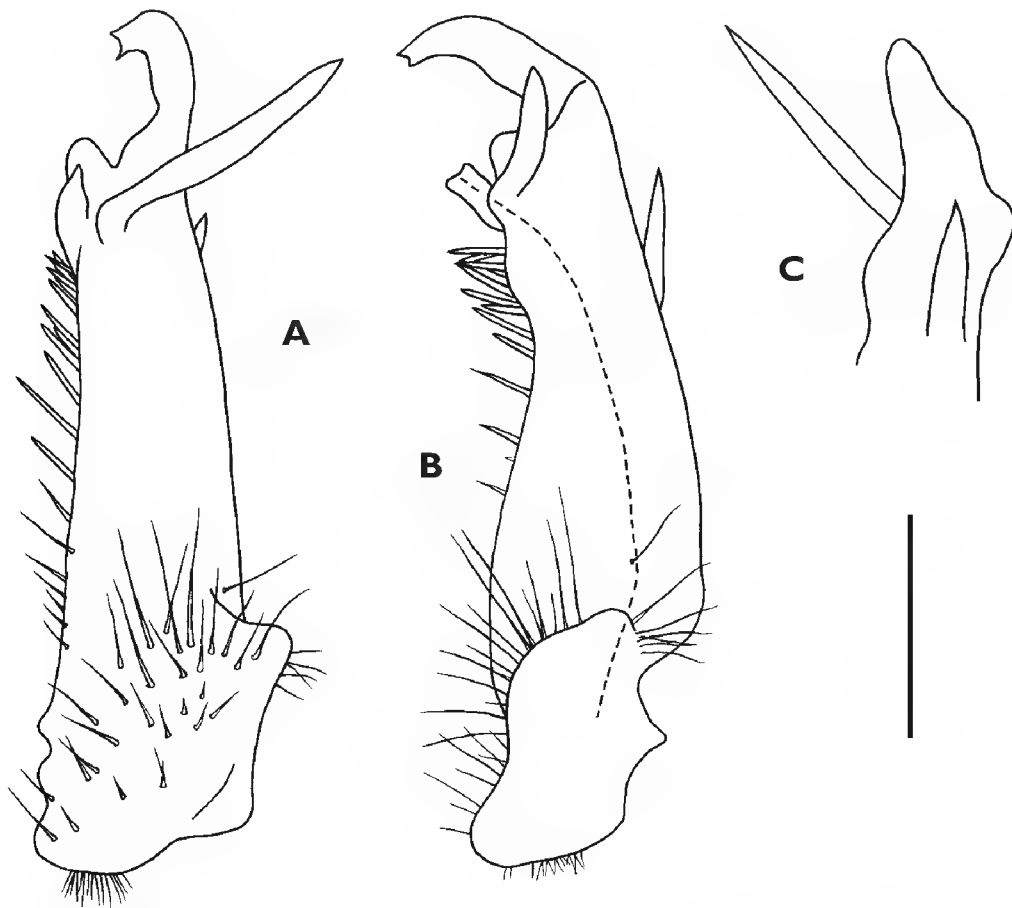


Figure 8. *Tasmaniosoma aureorivum* sp. n., paratype male ex QVM 23:12120. Posterior **A**, lateral **B** and anterior **C** views of left gonopod telopodite. Scale bar = 0.2 mm; dashed line marks course of prostatic groove.

Other material. None known.

Diagnosis. Metatergites without tubercles, gonopod telopodite with large, laterally directed, rod-like, pointed process.

Description. Male/female approximate measurements: length 13/12 mm, ring 12 paranota width 1.3/1.3 mm. Live colour not known; in alcohol, completely de-coloured.

Most non-gonopod details as for *T. armatum*, but antennomere 3 longest, ring 12 paranota $1.3 \times$ as wide as prozonite, leg 6 tarsus $1.5 \times$ as long as femur. Ring 6 sternite with legs 6 closer together than legs 7; legs 6 and 7 tabs long with sparse fine setae (not in discrete brushes); no setae on anterior margin of sternite.

Gonopod telopodites straight, tapering distally; base extended posterolaterally as distally concave shelf; posterior surface with thickened longitudinal ridge to ca $1/2$ telopodite height. Telopodite apex with four processes: (a) pointed, rod-like process arising on anterior surface and directed distally; (b) large, rod-like, pointed process arising on posterior surface, bent at base and directed laterally; (c) laminate process arising apically and curving posteriorly, the tip sometimes notched; (d) small solenomere arising posteromedially and directed posterodistally. Apex produced as small, rounded knob between solenomere and laminate process. Basal shelf concavity with long, fine setae; row of short, stout setae on posteromedial surface to ca $3/4$ telopodite height, increasing in length and thickness distally. Prostatic groove on medial surface of telopodite, curving gradually to solenomere base.

Female with sternites as wide as long; posterior margin of epigynum produced as short trapezoid.

Distribution. Known from three sites in eucalypt forest (holotype) and caves (paratypes) near Maydena in south central Tasmania, with a maximum distance between sites of ca 15 km (Fig. 24).

Etymology. Latin *aureus*, “golden”, + *rivus*, “stream”, noun used as adjective, after the type locality, Gold Creek.

Remarks. Telopodite details vary a little among the five known males. In the holotype the process arising on the anterior surface is longer than in the paratype illustrated and reaches almost as far distally as the top of the laminate process, which has a small tooth on the concave, posterior edge.

The paratypes are not troglomorphic and are likely to be from accidentally cave-dwelling populations. The holotype is from a non-karst site in the Styx River catchment. I have unsuccessfully searched for this species in forest in the adjoining Tyenna River catchment, where it may be rare.

***Tasmaniosoma australe* sp. n.**

urn:lsid:zoobank.org:act:2F05F087-0398-4F19-AFCD-9744B838E2B2

Figs 3D, 6C, 6D, 9; map Fig. 24

Holotype. Male, Australia, Tasmania, Lake Osborne Track, 43°13'04"S 146°46'03"E (DN810148) ±100 m, 880 m, 7 February 2004, K. Bonham, QVM 23:46574.

Paratypes. 3 males, 2 females, details as for holotype but 43°13'07"S 146°45'58"E (DN809147) ±100 m, 900 m, 13 February 2004, QVM 23:46575.

Other material examined. 4 males and 2 females from 4 other localities (see Appendix).

Diagnosis. Metatergites without tubercles, small rounded teeth posterolaterally on paranota, male leg 6 with triangular extension basally on prefemur, solenomere the longest telopodite process, with broad and flattened tip produced as three tooth-like or tab-like extensions.

Description. Male/female approximate measurements: length 18/18 mm, ring 12 paranota width 2.2/2.2 mm. Live colour not known; in alcohol, body fairly uniform light to medium brown.

Most non-gonopod details as for *T. armatum*, but antennomere 3 longest, relative widths tergite 6>5>4>2>head>3>collum, ring 12 paranota 1.3 × as wide as prozonite, posterior corners of most paranota produced as very small, rounded tooth, leg 6 tarsus 1.4 × as long as femur and femur longer than prefemur. From ca ring 8 posteriorly, sternites with small, blunt projection at each corner, i.e. just posterior to each of four leg bases. Ring 2 pit deep with well-defined semicircular rim, convex laterally. Ring 6 sternite with sparse fine setae near anterior margin; leg 6 tab barely detectable, with a few fine setae; leg 6 prefemur with rounded triangular extension posteriorly (Figs 6C, 6D); leg 7 tab very long (ca 1/2–2/3 length of leg 7 coxa), extending laterad of leg 6

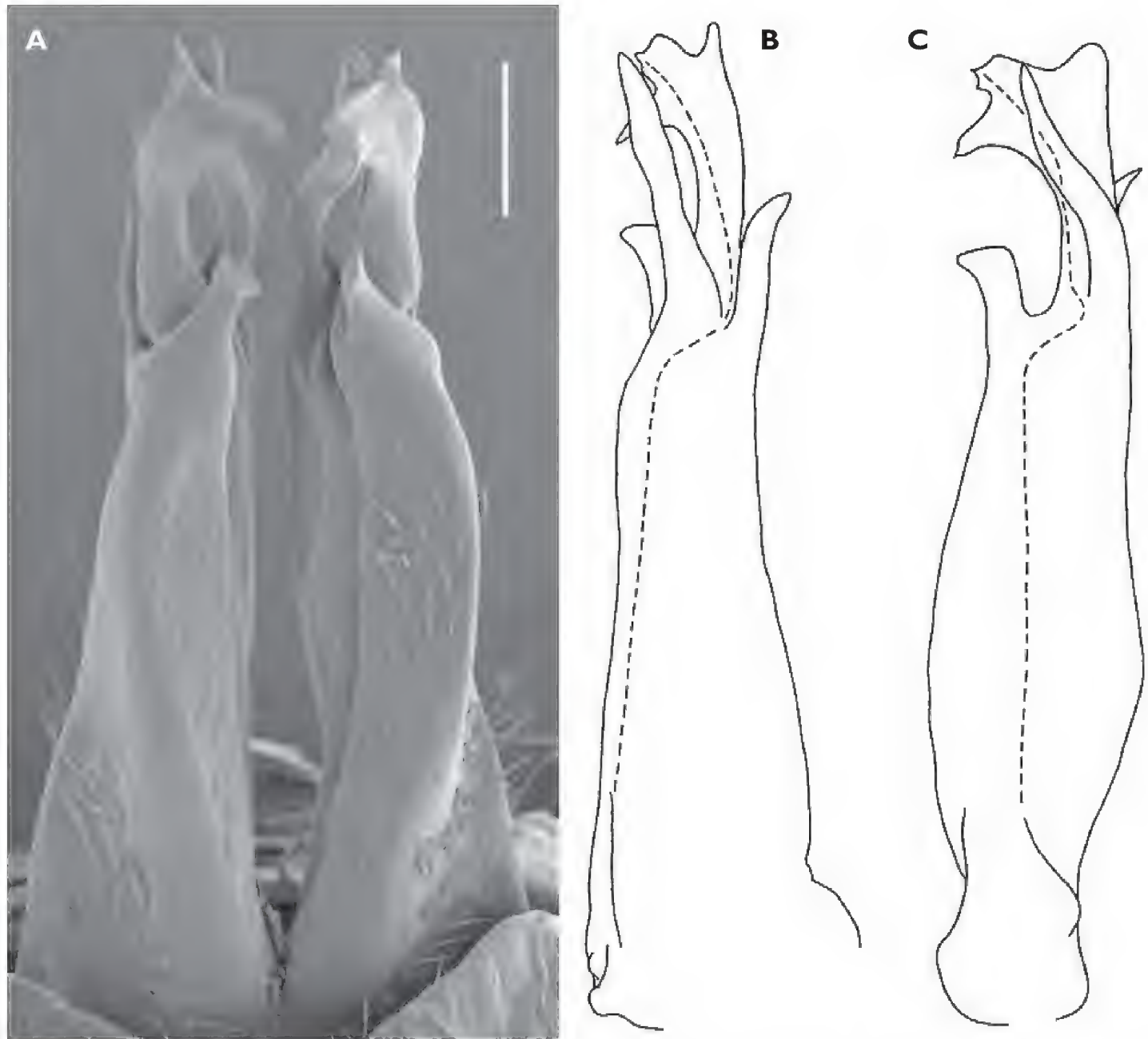


Figure 9. *Tasmaniosoma australe* sp. n., paratype males ex QVM 23:46575. **A** Posterior view of gonopod telopodites in situ **B** anterior and **C** medial views of right gonopod telopodite. Setation not shown in **B** and **C**; dashed lines mark course of prostatic groove. Scale bar = 0.2 mm.

prefemoral swelling, with sparse brush of fine setae basally on anteromedial surface; leg 7 coxa swollen distomedially, the swelling lying posterior to the leg 7 tab.

Gonopod telopodite (Fig. 9) straight, tapering distally, divided into four processes at between $2/3$ and $3/4$ telopodite height. Undivided portion with posterior surface roundly ridged longitudinally, base laterally extended as rounded protuberance. Processes comprise: (a) short, rod-like, round-tipped anterolateral process bent slightly outwards; (b) short, somewhat flattened posterior process with a rounded-truncate tip bent slightly posteromedially; (c) large solenomere, cylindrical basally, flattening at ca $1/2$ process height, curving medially and terminating in rounded tooth apically, with posterior tab carrying opening of prostatic groove and finger-like posterobasal extension; (d) large, rod-like, apically acute process arising just anteromedial to solenomere base and reaching nearly as far distally, slightly bent posterolaterally. Tracts of fine setae posteriorly on either side of the longitudinal telopodite ridge, and on anterolateral surface to ca $1/2$ telopodite height. Prostatic groove running distally on medial surface

of telopodite to level of division into processes, then running posterolaterally to enter solenomere base.

Female with leg 2 prefemur long and with large swelling distally on posterior surface; rings 2 and 3 ventrally with small, peg-like projection just lateral to epigynum (Fig. 3D). Sternite projections as in male but generally smaller, not as consistently expressed.

Distribution. Known from wet eucalypt forest and subalpine scrub to 1240 m elevation in south central Tasmania, extending in a ca 80 km-long line from northwest of Maydena to northwest of Southport (Fig. 24). Possibly parapatric with *T. aureorivum* sp. n. in the north of its range and with *T. warra* sp. n. in the south; not yet known to co-occur with either species.

Etymology. Latin *australis*, “southern”, adjective, for the southern distribution of this species.

Remarks. Females of *T. australe* are readily distinguished from females of *T. aureorivum* sp. n. and *T. warra* sp. n. by their leg 2 prefemoral swellings. A female from Hastings Caves (in QVM 23:46570) has the posterior margin of the epigynum produced not as a low triangle with rounded apex, but as an oblong with rounded corners.

***Tasmaniosoma barbatulum* sp. n.**

urn:lsid:zoobank.org:act:8B93AB56-F248-4A5C-99C9-EBAC6901ED28

Figs 3B, 5B, 10A; map Fig. 25

Holotype. Male, Australia, Tasmania, Scamander, 41°26'45"S 148°14'51"E (FQ041108) ±100 m, 80 m, pitfall emptied January 2001, R. Bashford, QVM 23:51554.

Paratypes. 1 male, Thompsons Marshes, Tas, 41°41'54"S 148°13'21"E (FP016828) ±250 m, 490 m, 9 June 1988, R. Mesibov, QVM 23:51521; 1 male, S of Dogwood Hill, Tas, 41°41'07"S 148°10'48"E (EP981843) ±250 m, 580 m, 14 July 1988, R. Mesibov, QVM 23:51522; 2 males, details as for holotype, QVM 23:51512.

Other material. None known.

Diagnosis. Metatergites with three transverse rows of large, low, contiguous tubercles; leg 7 sternal tab with dense brush of stout, rod-like setae; gonopod telopodite with two combs of long, stout, rod-like setae, the posterior comb directed basally, the anterior comb distally.

Description. Male ca 10 mm long, ring 12 paranota width ca 1.0 mm. Live colour not known; in alcohol completely decoloured.

Most non-gonopod details as for *T. armatum*, but antennal sockets separated by ca 2.5 × socket diameter, relative widths tergite 6>(5,head)>4>(3,2)>collum, ring 12 paranota ca 1.2 × as wide as prozonite, brush setae lacking on femur, gonopod aperture rim not produced. Metatergite (Fig. 3B) almost completely covered with three transverse rows of ca 12 large, low tubercles, each with small seta near posterior edge. Ring 2 pit not apparent except as slight concavity near anterior margin of ring. Ring 6 sternite

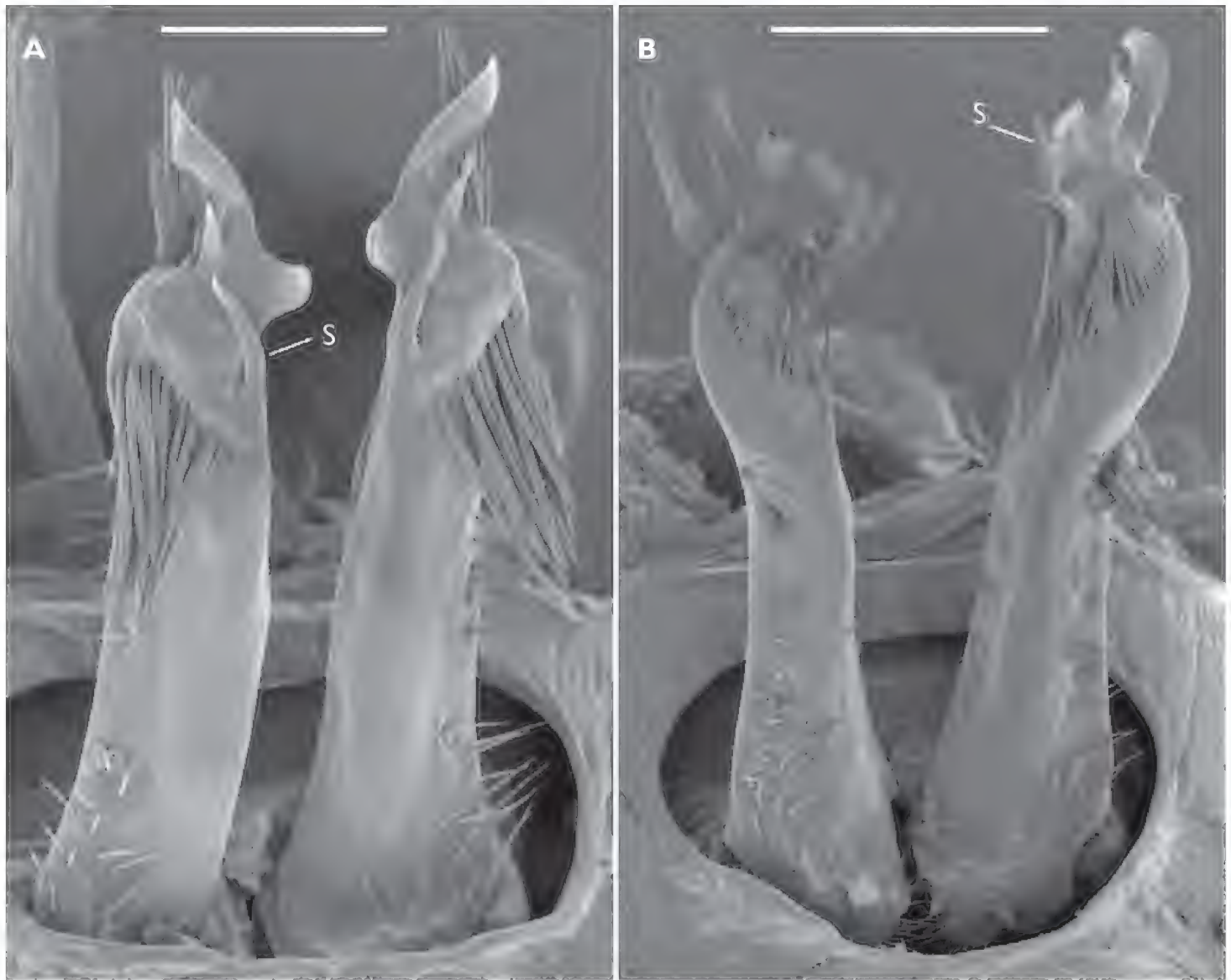


Figure 10. Posterior views of gonopod telopodites in situ of toptotypical male paratypes, with solenomere (s) indicated. **A** *Tasmaniosoma barbatulum* sp. n., ex QVM 23:51512 **B** *Tasmaniosoma clarksonorum* sp. n., ex QVM 23:46583. Scale bars: (A) = 0.1 mm, (B) = 0.2 mm. Slight bending of flattened apical process in (A) is a preparation artifact; tip of central branch of central process on right telopodite in (B) is broken off. Portions of the background in (A) have been digitally edited for clarity.

(Fig. 5B) with short leg 6 tab bearing a few fine setae; leg 7 tab long, thickened, with brush of stout setae; a few fine setae on anterior margin of sternite.

Gonopod telopodite (Fig. 10A) subcylindrical with small posterior extension at base, concave distally. Apex slightly produced posteriorly as rounded, thickened ridge, oriented obliquely to telopodite longitudinal axis (medial end of ridge lowest); basal surface of ridge with comb of 15–20 stout, pointed, rod-like setae, up to ca 1/4 telopodite height in length, directed basally. Solenomere short, cylindrical, acute, arising from medial end of ridge on distal side, directed distally. Telopodite apex with laminate process arising antero-medially; outer edge of process extended distally as long, rounded-truncate tab and medially as short, round-tipped tab, and bearing a small, flattened process arising mid-laterally near laminate process base and directed posterodistally. Anterior surface of telopodite with comb of 5–10 stout, pointed, rod-like setae, directed distally and arising in near-longitudinal row, increasing in length distally. A few fine setae posterolaterally near telopodite base and on concave surface of basal extension; ca 6 fine setae in midlength lateral row. Prostatic groove running distally on medial surface of telopodite directly to solenomere base.

Female not yet recognised.

Distribution. Known from dry and wet eucalypt forest at three sites on the northern part of the east coast of Tasmania, from Scamander to ca 10 km south of St Marys, a distance of ca 30 km (Fig. 25). Sympatric with *T. orientale* sp. n.

Etymology. Latin *barbatulus*, “with a small beard”, adjective, for the basally directed comb of rod-like processes on the gonopod telopodite.

***Tasmaniosoma bruniense* sp. n.**

urn:lsid:zoobank.org:act:2925D795-06EF-47EF-86CF-EB6BA3949921

Figs 6E, 11; map Fig. 24

Holotype. Male, Australia, Tasmania, Cuthberts Road, South Bruny Island, 43°23'57"S 147°17'53"E (EM240946) ±25 m, 340m, 27 October 2009, R. Mesibov, QVM 23:51631.

Paratypes. 1 stadium VI male, Mt Tobin, South Bruny Island, Tas, 43°23'55"S 147°19'12"E (EM258947) ±100 m, 6 February 2001, K. Bonham, QVM 23:51634; 3 males, 6 females, 3 stadium VI males, 1 stadium VI female, Staffords Road, South Bruny Island, Tas, 43°26'11"S 147°17'20"E (EM233905) ±25 m, 1 July 2009, S. Tassell, QVM 23:51633.

Other material. 1 male, details as for holotype but 43°23'55"S 147°17'59"E (EM242947) ±25 m, 360m, 26 October 2009, in 95% ethanol.

Diagnosis. Metatergites without tubercles, small rounded teeth posterolaterally on paranota, male leg 6 with triangular extension basally on prefemur, solenomere the longest telopodite process, with broad and flattened tip notched into two extensions.

Description. Male/female approximate measurements: length 14/13 mm, ring 12 paranota width 1.7/1.7 mm. Live and recently preserved specimens mainly dark brown, paler ventrally and in patches on paranota and sometimes medially at rear of metatergites; legs pale, light brown distally.

Most non-gonopod details as for *T. armatum*, but relative widths tergite 6>5>4>(2,head)>3>collum, ring 12 paranota 1.4 × as wide as prozonite, male sternites ca 1.2 × longer than wide. Most paranota with small rounded tooth at posterior corner, some paranota with second, smaller, rounded tooth just medial to corner; paranota decreasing in width from ring 11, ring 16 paranota merely a thickening without marginal groove, ring 17 without trace of paranota. Leg 6 with tarsus ca 1.5 × as long as femur; prefemur with unusually long brush setae and thin, triangular projection on posterior surface, directed basally (Fig. 6E). Ring 2 pit deep, wide, rim not well-defined posteromedially. Ring 6 sternite with legs 6 closer together than legs 7; short, thin leg 6 tab with brush of fine setae; leg 7 tab long, thickened, with brush of fine setae; anterior margin of sternite with a few long, fine setae.

Gonopod telopodite (Fig. 11) tapering distally from laterally swollen lower portion; divided into four main processes at ca 2/3 telopodite height. Undivided portion with posterior surface roundly ridged longitudinally, base posteriorly extended as thin shelf, concave

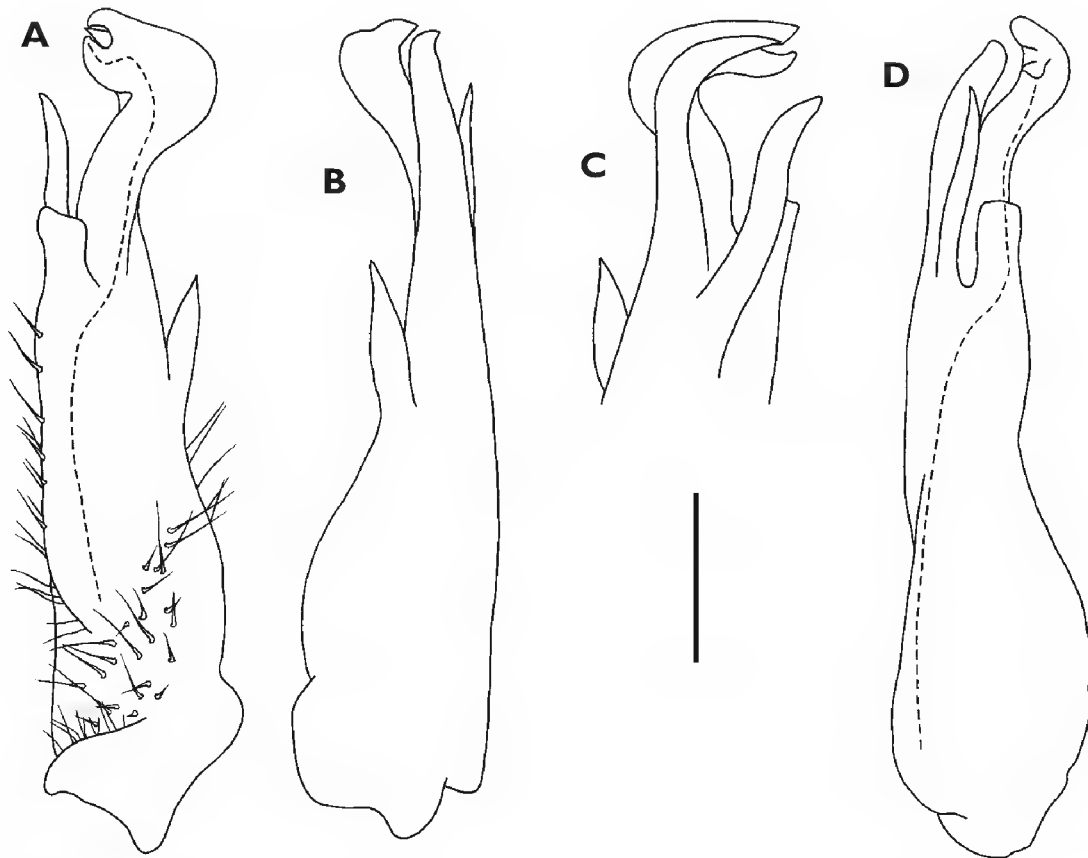


Figure 11. *Tasmaniosoma brunienne* sp. n., paratype male ex QVM 23:51633. Lateral **A**, anterior **B**, medial **C** and posterior **D** views of left gonopod telopodite. Setation only shown in **A**, dashed lines mark course of prostatic groove. Scale bar = 0.2 mm.

distally. Four distal processes comprise: (a) long, mediolaterally flattened, apically acute, slightly sinuous process arising on posteromedial surface; (b) short, somewhat flattened posterolateral process with rounded-truncate tip; (c) large solenomere arising on anterolateral surface, slightly flattened mediolaterally, the apex bent posteriorly and curving laterally, the tip bifid with the prostatic groove terminating in the lower portion; (d) large, apically acute process, slightly flattened mediolaterally, arising just anteromedial to solenomere base, closely pressed to solenomere and reaching nearly as far distally. In addition, a short, acute process arising at ca 1/2 telopodite height on anterolateral surface and terminating just distal to level of solenomere base. Tracts of fine setae posteriorly on posterior longitudinal ridge, and running obliquely from posterobasal shelf to just basal to anterior process on anterolateral surface. Prostatic groove running distally on medial surface of telopodite to just basal to division into processes, then running posterolaterally to enter solenomere base.

Female leg 2 prefemur distally swollen, with small, rounded, tooth-like projection arising midlength on posteromedial surface; sternites as wide as long; posterior margin of epigynum produced as short, wide trapezoid.

Distribution. Known from three sites in wet eucalypt forest with cool temperate rainforest understorey on South Bruny Island, with a maximum distance between sites of ca 5 km (Fig. 24). Co-occurs with *T. warra* sp. n. at the type locality.

Etymology. Adjective; all known specimens are from Bruny Island.

Remarks. Females and subadults can be recognised by the prominent tooth on the posterior margin of the metatergites, and females can also be distinguished from co-occurring females of *T. warra* sp. n. by the projection on the leg 2 prefemur in *T. brunienne*.

***Tasmaniosoma cacophonix* sp. n.**

urn:lsid:zoobank.org:act:2857F774-8881-4A40-A182-6C423BCAD7F1

Figs 4C, 12; map Fig. 26

Holotype. Male, Australia, Tasmania, Glennons Road area, 41°03'41"S 147°34'17"E (EQ479541) ±100 m, 130 m, 6 January 1994, R. Mesibov, QVM 23:51661.

Paratypes. 8 males, 2 females, Eddystone Point, Tas, 40°59'44"S 148°19'29"E (FQ113607) ±100 m, 10 m, pitfall emptied 22 April 1987, T. Churchill, QVM 23:46776; 1 male, 1 female, same details but 18 November 1987, QVM 23:46777; 7 males, Old Chum Dam, Tas, 41°02'59"S 148°02'46"E (EQ878550) ±100 m, 140 m, pitfall 7/2 emptied February 2000, R. Bashford, QVM 23:46748; 1 male, Sapphire Creek, Mt Cameron, Tas, 40°59'02"S 147°56'30"E (EQ791624) ±50 m, 360 m, 14 November 2009, K. Bonham & A. Throssell, QVM 23:51660.

Other material examined. 79 males and 1 female from 40 other sites (see Appendix).

Diagnosis. Metatergites without tubercles, gonopod telopodite with five processes, the largest and longest terminating in thorn-like extension.

Description. Male/female approximate measurements: length 14/13 mm, ring 12 paranota width 1.6/1.4 mm. Live colour pale greenish-yellow, with darker yellowish-brown patches on sides and (variably) along dorsal midline, and with fine red speckling on paranota posteriorly and on head. In alcohol, specimens often completely de-coloured or with reddish patches dorsally.

Most non-gonopod details as for *T. armatum*, but antennomere 3 longest, relative widths tergite 6 > 5 > head > (4,2) > 3 > collum, ring 12 paranota 1.4 × as wide as prozonite, male midbody metatergites ca 1.8 × as wide as long. Ring 2 pit (Fig. 4C) deep, wide, rim well-defined except posteriorly. Ring 6 sternite with short leg 6 and 7 tabs each bearing short, linear brush of fine setae; legs 6 closer together than legs 7; sternite with anterior portion elevated on either side, creating triangular depression with apex at anterior margin.

Gonopod telopodite (Fig. 12) somewhat flattened anteroposteriorly, almost fusiform in lateral or medial view but with slight longitudinal concavity on posterior surface. Divided at ca 2/3 telopodite height into tight cluster of five processes, described here from longest to shortest: (a) large central process, appearing to be continuation of telopodite body, tapering distally, curving slightly medially and terminating in distally curving, thorn-like structure set off by slight constriction; (b) subcylindrical, acute process arising lateral and slightly posterior to central process, curving slightly anteriorly; (c) and (d) pair of closely pressed, mediolaterally flattened processes, medial to central process, the outer the solenomere; (e) lateral to solenomere and arising slightly basal to it, a rod-like, acute process directed posterodistally. Small patch of short, fine setae on posterior surface at ca mid-height; sparse, fine setae running anterodistally from base on posterior surface and terminating at ca 1/3 telopodite height; small linear group of fine setae midlaterally on slight longitudinal thickening. Prostatic groove curving posterodistally on medial surface, turning distally just posterior to process (e) base before entering solenomere base.

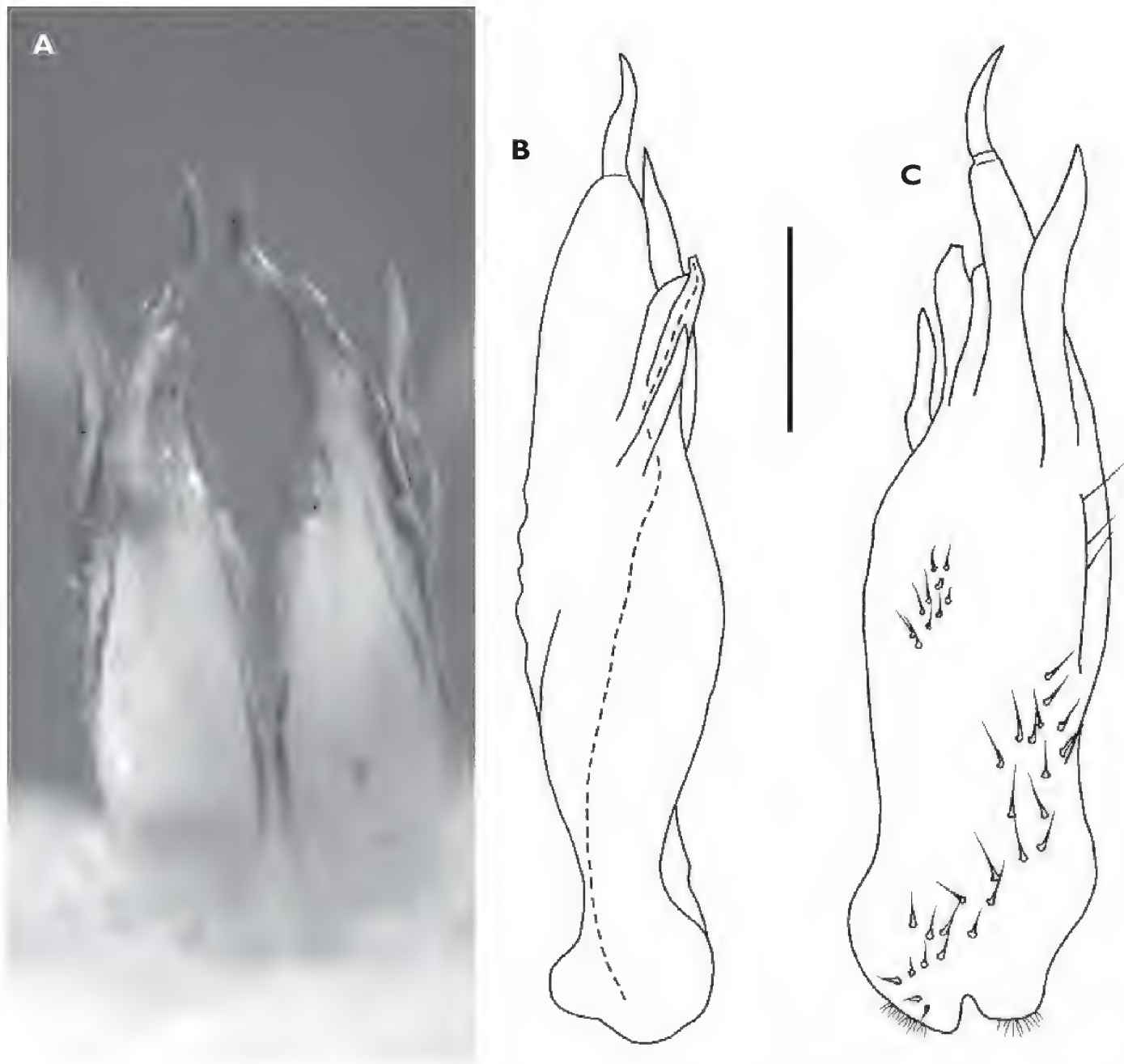


Figure 12. *Tasmaniosoma cacophonix* sp. n., paratype male ex QVM 23:46748. **A** Anterior view of gonopods in situ **B** medial and **C** posterolateral views of left gonopod telopodite. Setation only shown in **C**, dashed line marks course of prostatic groove. Scale bars = 0.2 mm.

Female somewhat smaller than male, not with long midbody metatergites; posterior margin of epigynum produced as short, wide trapezoid.

Distribution. Common and sometimes locally abundant in eucalypt forest and coastal heath and scrub over ca 3000 km² in northeast Tasmania, from sea level to at least 370 m elevation (Fig. 26). Known from the north coast south almost to Mathinna, and from the east coast west to the neighbourhood of Bridport. Sympatric with *T. decussatum* sp. n. in various parts of its range, and possibly parapatric with *T. clarksonorum* sp. n., *T. gerdiorivum* sp. n. and *T. orientale* sp. n.

Etymology. Noun in apposition, honouring the village bard Cacophonix in the English version of the much-loved series of graphic novels *The Adventures of Asterix*. In anterior or posterior view, the paired central processes on the gonopod telopodite (Fig. 12A) remind me of the frame of a lyre, as played so memorably by Cacophonix.

Remarks. *T. cacophonix* is abundant in eucalypt forest near Old Chum Dam, ca 10 km south-southeast from Gladstone in northeast Tasmania. Pitfall-trapping in this

area in 1989/90 yielded 40 males, but many of these are partly macerated. As Old Chum Dam paratypes I selected five males that were trapped in 2000 and are in much better condition. Old Chum Dam is also the type locality of *Atrophotergum sodalis* Mesibov, 2004 (see Introduction).

***Tasmaniosoma clarksonorum* sp. n.**

urn:lsid:zoobank.org:act:F8AE3AE0-B587-4720-B41A-CFCD5EE353EA

Figs 1B, 1F, 10B; map Fig. 25

Holotype. Male, Australia, Tasmania, Mt Barrow, 41°21'33"S 147°24'54"E (EQ346211) ±100 m, 740 m, 1 August 2005, W. & L. Clarkson, under bark on *Eucalyptus*, QVM 23:46584.

Paratypes. 10 males, 2 females, 1 stadium VI female, details as for holotype, QVM 23: 46583; 9 males, 5 females, details as for holotype but 41°21'30"S 147°24'24"E (EQ339212) ±100 m, 750 m, QVM 23:46582.

Other material examined. 80 males and 17 females from 28 other sites (see Appendix).

Diagnosis. Metatergites with three transverse rows of large, low, contiguous tubercles; leg 7 sternal tab with dense brush of stout, rod-like setae; gonopod telopodite with central, flattened process notched into three parts and two combs of long, stout, rod-like setae on posterior surface, the distal comb directed distally and the much smaller basal comb directed basally.

Description. Male/female approximate measurements: length 11/11 mm, ring 12 paranota width 1.4/1.5 mm. Live and freshly preserved males with head violet dorsally; antennae purplish-brown; legs pale, reddish distally; paranota with reticulate red pattern (Fig. 1B); prozonites dorsally brown, darker laterally and posteriorly, with small paramedian pale yellow patches, arcuate or semicircular, in posterior half; metazonites dorsally with paramedian pale yellow patches on waist contrasting with dark brown colouring medially and laterally, and metatergites light brown with darker patches bordering paranota, and paramedian pale yellow spots in posterior half; laterally (Fig. 1F) a mottled brown on metazonites below paranota and on prozonites, pale yellow on metazonites just posterior to suture; ventrally with pale yellow prozonites and light brown sternites. Female live colouring similar, but with pale yellow patches more distinct, and with median longitudinal dark brown band dorsally on metazonites. In alcohol, long-preserved specimens light brown with reddish markings laterally on metatergites.

Most non-gonopod details as for *T. armatum*, but antennomeres 3 and 6 equal in length and longest, relative widths tergite 6>5>(4,head)>(3,2)>collum, ring 12 paranota 1.3 × as wide as prozonite, leg 6 tarsus 2 × as long as femur, prefemur not as swollen. Anterior margin of metatergite smoothly curving into lateral edge of paranota (shoulder less distinct than in *T. armatum*); metatergite almost completely covered with three transverse rows of 10–12 large, low tubercles, each with small seta near pos-

terior edge. Ring 2 pit with rim only defined anteriorly and laterally. Ring 6 sternite with no leg 6 tab; leg 7 tab long, thickened, with row of fine setae on anterior surface; sparse row of fine setae on anterior sternal margin.

Gonopod telopodite (Fig. 10B) straight, subcylindrical, divided at slightly more than 3/4 telopodite height into apical cluster of three major processes: (a) short, rod-like, slightly curved, acute solenomere medially; (b) long, rod-like, acute and slightly sinuous lateral process, directed laterally before abruptly turning distal; (c) broad, flattened central process between (a) and (b), deeply notched to produce blade-like, curved anterolateral branch, slender, acute central branch and rounded, tab-like posteromedial branch. In addition, very short, stout process arising just anterior to solenomere base and directed anteromedially, the tip notched. Closely packed row of 15–20 stout, rod-like, distally directed setae on distal side of oblique thickening on the posterior surface, the row running from a point basal to solenomere origin distolaterally to a point basal to lateral process origin; cluster of 5–10 stout, rod-like setae arising at ca 1/2 telopodite height on posterolateral surface and directed posterolaterally and slightly basally; and sparse fine setae on posterolateral surface to ca 1/3 telopodite height. Prostatic groove running more or less straight base of solenomere on medial surface.

Female more robust than male and with distinctly shorter midbody metatergites, width:length 3.0 in female vs 2.3 in male.

Distribution. Often locally abundant in cool temperate rainforest and wet eucalypt forest over ca 2000 km² in northeast Tasmania from ca 250 m to at least 1000 m elevation (Fig. 25). Occurs west almost to Lilydale, north and east to the Weldborough area, and south to Mt Stewart between Epping Forest and Avoca. The southern outlier on Mt Stewart may not be a disjunct population; the forests between this *T. clarksonorum* locality and the more northern ones have not yet been carefully surveyed for millipedes. Sympatric with *T. decussatum* sp. n. and *T. gerdiorivum* sp. n., parapatric with *T. armatum* on Mt Barrow and near Weavers Creek, and possibly parapatric with *T. cacophonix* sp. n. in the east of the *T. clarksonorum* range.

Etymology. In honour of Tasmanian field naturalists Wade and Lisa Clarkson, who enthusiastically searched for this and other *Tasmaniosoma* species in 2005 and 2006.

***Tasmaniosoma compitale* sp. n.**

urn:lsid:zoobank.org:act:B431F3B4-C271-4396-8ADB-8D56E804C2E7

Figs 1C, 1G, 4A, 13; map Fig. 23

Holotype. Male, Australia, Tasmania, Deep Gully Creek, 41°25'02"S 145°35'43"E (CQ825138) ±100 m, 610 m, 13 October 1991, R. Mesibov, QVM 23:45968.

Paratypes. 1 female, details as for holotype, QVM 23:45969; 1 male, same details but 14 October 1991, QVM 23:45970; 1 female, same details but 18 October 1991, QVM 23:45971; 1 female, same details but 24 October 1991, QVM 23:45974; 1 male, Fingerpost, Tas, 41°24'37"S 145°37'44"E (CQ853146) ±100 m, 610 m, 17 September 1991, R. Mesibov, QVM 23:45955; 2 females, same details, QVM 23:45956;

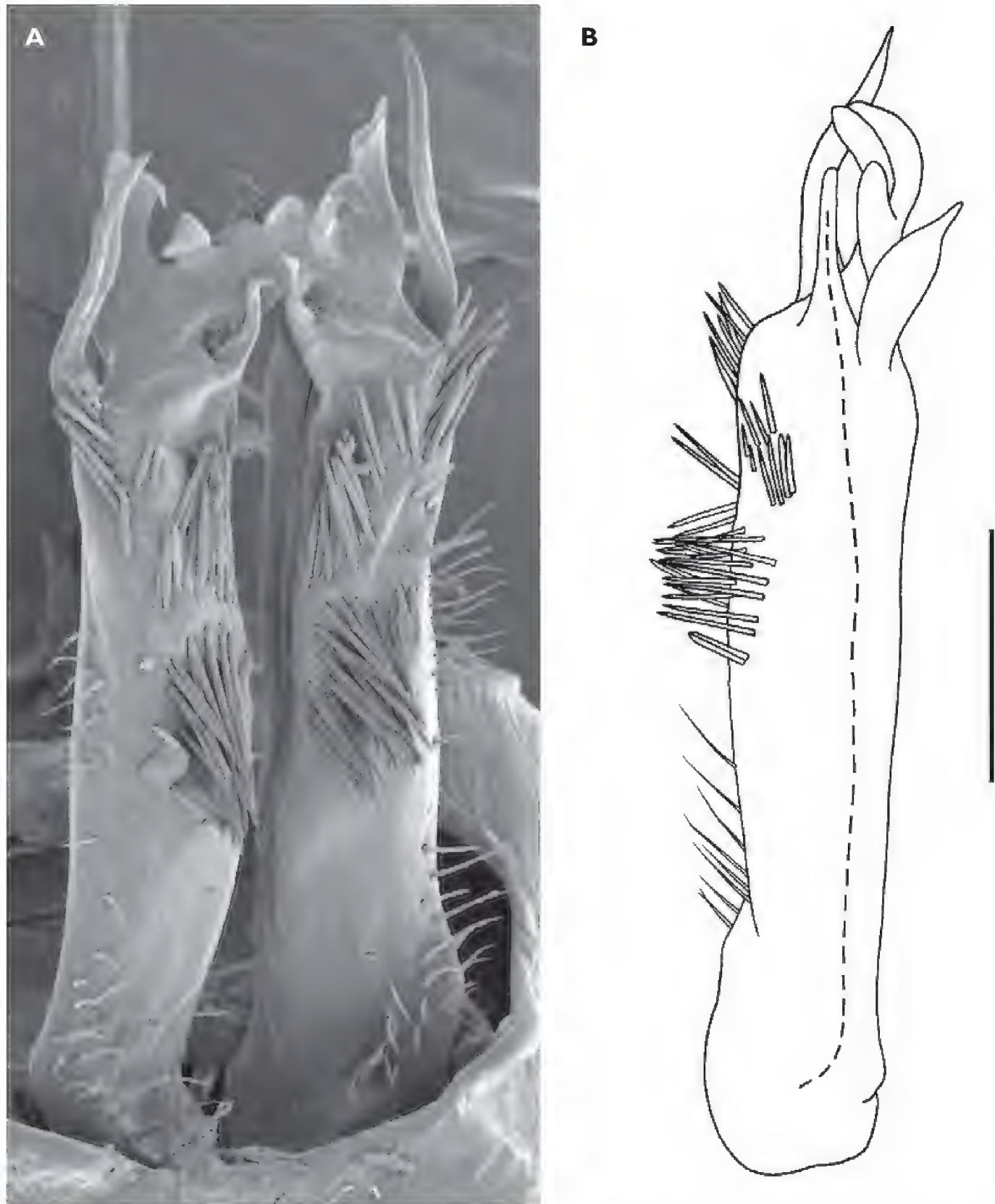


Figure 13. *Tasmaniosoma compitale* sp. n. **A** Posterior view of gonopods in situ (paratype male ex QVM 23:45971) **B** medial view of right gonopod telopodite (ex QVM 23:45963, from close to type locality). Dashed line marks course of prostatic groove. Scale bar ca 0.2 mm.

1 male, same details but 18 September 1991, QVM 23:45957; 1 female, same details, QVM 23:45958; 1 female, 1 stadium VI male, same details but 23 September 1991, QVM 23:45959; 1 female, same details but 26 September 1991, QVM 23:45961.

Other material examined. 53 males, 33 females, 3 stadium VI females and 1 stadium V female from 46 other sites (see Appendix).

Diagnosis. Metatergites with three transverse rows of large, low, contiguous tubercles; leg 7 sternal tab with dense brush of stout, rod-like setae; gonopod telopodite with

central, flattened process notched into three parts and two comparably sized combs of long, stout, rod-like setae on posterior surface, the basal comb directed basally, the distal comb distally.

Description. Male/female approximate measurements: length 12/13 mm, ring 12 paranota width 1.4/1.6 mm. Freshly preserved specimens yellowish-brown to unaided eye, under microscope with complex pattern (Figs 1C, 1G): paired paramedian light-yellow patches on prozonite and anteriorly on metatergite, contrasting with adjoining dark brown patches; metatergite otherwise light mottled yellowish brown; rings laterally with mottled yellowish-brown and large yellowish patch (Fig. 1G, **p**) just under paranotal margin; head reddish; antennae dark brown; legs pale, reddish distally. Live specimens similarly coloured but yellow not so intense; in alcohol, long-preserved specimens completely decoloured.

Most non-gonopod details as for *T. armatum*, but relative widths tergite 6>5>4>head>(3,2)>collum, ring 12 paranota 1.3 × as wide as prozonite, leg 6 tarsus 1.5 × as long as femur and femur longer than prefemur. Anterior margin of metatergite smoothly curving into lateral edge of paranota (shoulder less distinct than in *T. armatum*); metatergite almost completely covered with three transverse rows of 10–12 large, low tubercles, each with small seta near posterior edge. Ring 2 pit not apparent (Fig. 4A). Ring 6 sternite with no leg 6 tab; leg 7 tab long, thickened, with brush of stout setae; small rounded process medially on leg 7 coxa just posterior to sternal tab; anterior sternite margin with two long, fine, paramedian setae.

Gonopod telopodite (Fig. 13) straight, slender, slightly excavate basally on posterior surface, divided at ca 3/4 telopodite height into four processes: (a) short, slightly flattened, acute solenomere arising on medial surface and directed distally; (b) short, blade-like, acute process arising on anterolateral surface just basal to solenomere origin and directed distally and slightly anteriorly; (c) large central process, anteroposteriorly flattened, the wide distal margin divided into acute anterolateral branch and round-edged, tab-like posteromedial branch, the latter giving rise on distal edge to short, slender, tapered process directed posterodistally; (d) large, blade-like, acute process arising on lateral surface, abruptly bent and directed distally. Two dense clusters of stout, rod-like setae: 30–40 arising at ca 1/2 telopodite height on posterior surface, directed posteriorly or posterobasally; 20–30 in band running anterolaterally across posterior surface from ca 1/2 to ca 3/4 telopodite height, mainly directed distally. Sparse fine setae running from posterior surface near base anterodistally along lateral surface to ca 1/2 telopodite height. Prostatic groove running more or less directly on medial surface to base of solenomere.

Female with sternites as wide as long; legs 2 usually missing (Mesibov, in preparation).

Distribution. Sometimes locally abundant in wet eucalypt forest, cool temperate rainforest and riparian tea-tree forest over at least 3000 km² in northwest Tasmania, from Table Cape west to the Marrawah area, and from near sea level at Black River south to the Waratah area at 650 m elevation (Fig. 23). The *T. compitale* range is bounded on three sides by the range of *T. hickmanorum* sp. n. and the two species are tightly parapatric at some localities (Mesibov, in preparation).

T. compitale has also been collected in plantations of *Pinus radiata* (Bonham, Mesibov and Bashford 2002; specimens coded as *Tasmaniosoma* sp. 1).

Etymology. Latin *compitalis*, “of crossroads”, adjective. The types were collected near the Fingerpost, a well-known crossroads in northwest Tasmania.

Remarks. Gonopod structure is nearly constant across the *T. compitale* range, but overall body size varies, with the largest specimens (to ca 15 mm long) occurring in coastal and near-coastal areas.

The bright and complex pigmentation of *T. compitale* is lost with long storage in alcohol, and long-preserved females of *T. compitale* and *T. hickmanorum* n sp. cannot be separated. Live and freshly preserved females can be distinguished by colour: *T. compitale* yellowish-brown with a large, prominent yellowish patch just under the paranotal margin (Fig. 1G), *T. hickmanorum* reddish-brown with only a small yellowish patch under paranotal margin (Fig. 1I).

***Tasmaniosoma decussatum* sp. n.**

urn:lsid:zoobank.org:act:28ECADB3-5E75-4A06-B6D2-61D431FF7E53

Figs 4D, 14; map Fig. 25

Holotype. Male, Australia, Tasmania, Rattler Hill, 41°13'43"S 147°53'20"E (EQ744353) ±100 m, 650 m, 27 August 1990, R. Mesibov, plot NE2, QVM 23:51555.

Paratypes. 2 males, 3 females, Pearly Brook, Tas, 41°04'18"S 147°39'43"E (EQ555529) ±100 m, 80 m, 1 March 1992, R. Mesibov, QVM 23:46692; 2 males, details as for holotype, QVM 23:46703; 2 males, same details but 3 September 1990, QVM 23:46704; 1 male, Rattler Hill, Tas, 41°13'49"S 147°53'21"E (EQ744351) ±100 m, 680 m, 23 August 1990, R. Mesibov, plot NE1, QVM 23:46700; 2 males, same details but 25 August 1990, QVM 23:46701; 1 male, same details but 26 August 1990, QVM 23:46702; 4 males, E of Rattler Hill, Tas, 41°13'43"S 147°53'16"E (EQ743353) ±100 m, 650 m, 18 January 2005, R. Mesibov, QVM 23:46699.

Other material examined. 86 males from 13 other localities (see Appendix)

Diagnosis. Metatergites with three weakly developed, transverse rows of low tubercles, gonopod telopodite apex divided into cluster of five processes including broad, flattened solenomere, the most lateral process curving medially.

Description. Male/female approximate measurements: length 11/11 mm, ring 12 paranota width 1.3/1.3 mm. Live colour not known; in alcohol, decoloured with small reddish patches dorsally.

Most non-gonopod details as for *T. armatum*, but antennomere 3 longest, relative widths tergite 6 > 5 > (4, head) > 2 > 3 > collum, ring 12 paranota 1.3 × as wide as prozonite, leg 6 femur longer than prefemur, male midbody metatergites 1.8 × as wide as long. Three transverse rows of ca 10 large, low tubercles on tergites sometimes just detectable in lateral view with oblique lighting, not as clearly expressed as in co-occurring *T. clarksonorum* sp. n. Ring 2 pit (Fig. 4D) deep, very wide, with rim well-defined except posteriorly. Ring 6 sternite with legs 6 not as widely separated as legs 7; no leg 6 tab;

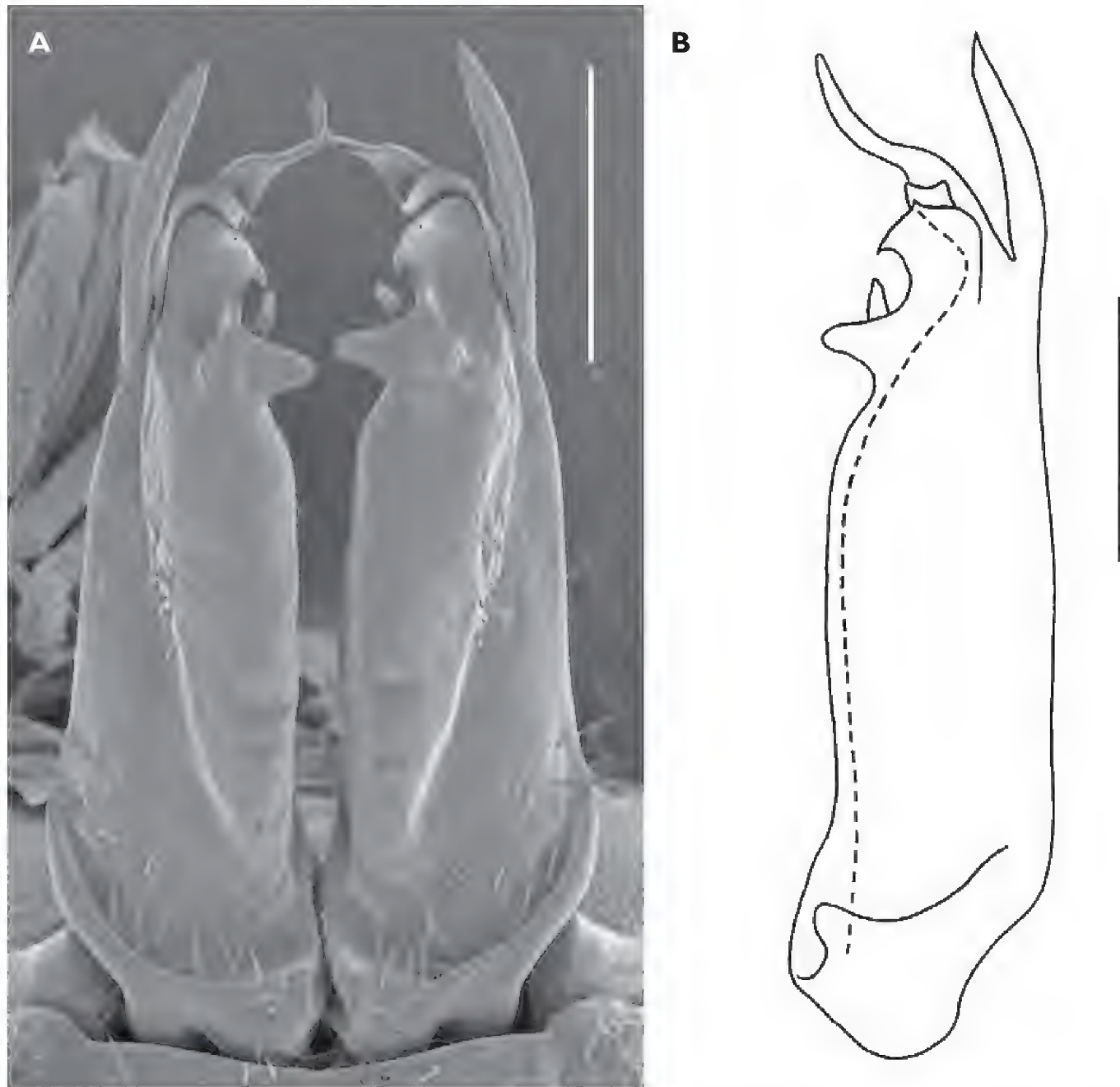


Figure 14. *Tasmaniosoma decussatum* sp. n., paratype male ex QVM 23:46699. **A** Posterior view of gonopods in situ **B** posterior and slightly lateral view of left gonopod telopodite. Setation not shown in **B**, dashed line marks course of prostatic groove. Scale bars = 0.2 mm. A small portion of the background in **A** has been digitally edited for clarity.

leg 7 tab short with brush of fine setae; anterior margin of sternite with groups of fine setae laterally, not in dense brushes.

Gonopod telopodite (Fig. 14) straight, stout, slightly tapered distally; base extended posteriorly as concave shelf (concave upwards); posteromedial surface roundly ridged longitudinally. Telopodite divided at ca 3/4 telopodite height into tight cluster of five processes: (a) solenomere anteroposteriorly flattened, produced as small rounded tab directed medially and larger distal tab with rounded edge and small medial tooth, prostatic groove opening centrally on distal edge; (b) short, slender, acute process arising anteromedial to solenomere origin and slightly bent medially; (c) laminate process closely applied to distal tab of solenomere on anterolateral side and slightly longer than solenomere; (d) and (e), two long, blade-like processes arising anterior to laminate process, the lateral process acute and curving slightly posteromedially, the medial process strongly tapered and curved posteromedially, the tip turning distally.

Small group of short, fine setae at ca 1/2 telopodite height on lateral surface of posterior ridge; sparse, fine setae running anterodistally from basal shelf; and a few fine setae in row on lateral surface at ca 1/2 telopodite height. Prostatic groove running distally, then curving laterally to enter base of distal tab of solenomere, and curving within tab (concave medially).

Female with posterior margin of epigynum produced as short, wide trapezoid.

Distribution. Often locally abundant in wet eucalypt forest and cool temperate rainforest over ca 1500 km² in the eastern portion of northeast Tasmania, from 80 to at least 740 m elevation (Fig. 25). Co-occurs with *T. clarksonorum* sp. n. at Mt Michael and Mt Victoria and near Weldborough in the northeast highlands. Sympatric with *T. cacophonix* sp. n., but co-occurrences may be rare because the latter species prefers drier, more open forest. Possibly parapatric with *T. gerdiorivum* sp. n. in the western part of the *T. decussatum* range.

Etymology. Latin *decussatus*, “X-shaped”, adjective, for the usually crossed tips of two of the gonopod processes in situ.

***Tasmaniosoma fasciculum* sp. n.**

urn:lsid:zoobank.org:act:C6C55E40-6555-4146-9BB6-7401CFDD9858

Figs 1D, 1H, 5C, 15; map Fig. 26

Holotype. Male, Australia, Tasmania, Little Claytons Rivulet, 41°12'24"S 146°12'07"E (DQ330378) ±25 m, 100 m, 27 December 2009, R. Mesibov & T. Moule, QVM 23:51664.

Paratypes. 1 male, same locality as holotype but 41°12'28"S 146°12'12"E (DQ331377) ±100 m, 100 m, 30 November 1997, R. Mesibov & T. Moule, QVM 23:46644; 2 males, 1 stadium VI male, 2 stadium VI females, same details as holotype, QVM 23:51665.

Other material examined. 20 males and 3 females from 17 other sites (see Appendix).

Diagnosis. Metatergites with three transverse rows of large, low, contiguous tubercles; leg 7 sternal tab with dense brush of stout, rod-like setae; gonopod telopodite with central, anvil-shaped process and two comparably sized combs of long, stout, rod-like setae on posterior surface, both directed distally.

Description. Male/female approximate measurements: length 12 /11 mm, ring 12 paranota width 1.2/1.2 mm. Live and freshly preserved specimens with reddish-brown head and antennae and complex pattern of strongly contrasting yellow and brown patches on most rings (Figs 1D, 1H): prozonites have paired paramedian yellow patches with brown patches medially and laterally, metazonites have paired paramedian yellow patches anteriorly and posteriorly, strongly contrasting with dark brown patches marginally on paranota and more diffuse paramedian brown bands along posterior margin and just anterior to transverse furrow. Live specimens similarly coloured but yellow not so intense; in alcohol, long-preserved specimens completely decoloured.

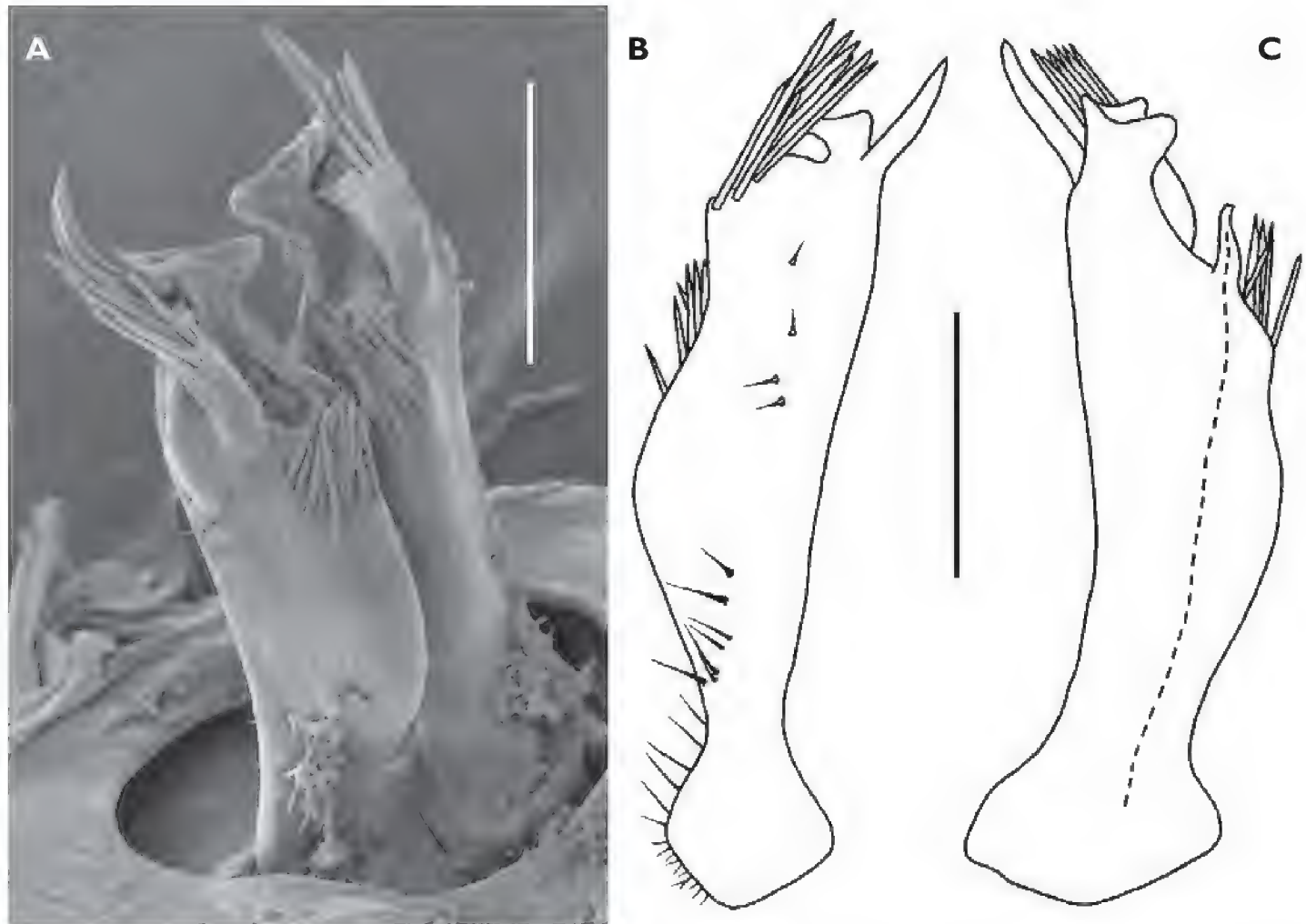


Figure 15. *Tasmaniosoma fasciculum* sp. n., paratype males. **A** Right posterolateral view of gonopods in situ (ex QVM 23:46638) **B** lateral and slightly anterior and **C** medial views of left gonopod telopodite (ex QVM 23:46635). Scale bars = 0.2 mm.

As for *T. armatum* in most non-gonopod details, but relative widths tergite $6 > 5 > (4, \text{head}) > (3, 2) > \text{collum}$, leg 6 tarsus $1.5 \times$ as long as femur. Metatergite almost completely covered with three transverse rows of 10–12 large, low tubercles, each with a small seta near posterior edge. Ring 2 pit not apparent except as slight concavity near anterior margin of ring. No setae on anterior margin of ring 6 (Fig. 5C); leg 6 tab short, with a few fine setae; leg 7 tab long, thickened, with brush of stout setae.

Gonopod telopodite (Fig. 15) arching anteriorly, strongly narrowed at ca $1/4$ telopodite height, tip divided into four processes: (a) small, subcylindrical, distally tapered solenomere arising on medial surface and directed distally, curving medially near tip; (b) thick, tab-like bulge arising posterolaterally and bearing a tight cluster of 6–8 long, stout, rod-like setae directed anterodistally and slightly laterally; (c) anvil-shaped process arising on anteromedial surface, flattened anteroposteriorly, rounded medial end and pointed lateral end of “anvil” both curving posteriorly; (d) long, blade-like, acute process arising on anterolateral surface and directed distally. Second tight cluster of ca 15 stout, rod-like setae arising on posterior surface just basal to division of telopodite into processes, setae reaching almost as far distally as solenomere; sparse fine setae on posterior surface near base and along lateral surface to level of telopodite division into processes. Prostatic groove running on medial surface directly to solenomere base.

Female with sternites as wide as long.

Distribution. Known from eucalypt forest over ca 2000 km² in north central Tasmania to 550 m elevation (Fig. 26). Not yet found west of the Dial Range, south of Maggs Mountain or east of the Birrallee Road. Co-occurs with *T. hickmanorum* sp. n.

Etymology. Latin *fasciculus*, diminutive of *fascis*, “sheaf”, adjective, for the tight sheaf of stout, rod-like setae on the tip of the gonopod.

Remarks. I have not been able to recognise species-diagnostic features in long-preserved, decoloured females of *T. fasciculum*. As a result, I cannot confidently assign to *T. fasciculum* a number of possible female specimens from localities within the known range (in the QVM collection) because there are no associated males. The description of the female (above) is based on three specimens found close to sites in the Gog Range and Dial Range where I have also collected males.

I may also have overlooked *T. fasciculum* outside its known range in north central Tasmania. In the field, an adult of this uncommon species can easily be mistaken for a stadium V or VI juvenile of the co-occurring *T. hickmanorum* sp. n.

***Tasmaniosoma fragile* sp. n.**

urn:lsid:zoobank.org:act:066F3EC2-2202-410C-B7A5-AA99E4C448A6

Fig. 16; map Fig. 25

Holotype. Male, Australia, Tasmania, Apsley River, 41°51'16"S 148°12'05"E (EP996655) ±100 m, 130 m, 20 July 1988, R. Mesibov, QVM 23:51666.

Paratypes. 1 male, details as for holotype, QVM 23:46766; 1 male, same details but 41°51'16"S 148°11'47"E (EP992655) ±100 m, 19 July 1988, QVM 23:46765.

Other material examined. 5 males and 3 females from four other localities (see Appendix).

Diagnosis. Metatergites with three transverse rows of large, low, contiguous tubercles; leg 7 sternal tab with dense brush of stout, rod-like setae; gonopod telopodite with central, flattened process notched into three parts and three comparably sized combs of long, stout, rod-like, setae: distally directed on lateral and anterior surfaces, basally directed on posterior surface.

Description. Male/female approximate measurements: length 12/14 mm, ring 12 paranota width 1.5/1.8 mm. Live colour not known; in alcohol, uniformly pale yellowish brown.

Most non-gonopod details as for *T. armatum*, but antennomere 3 longest, relative overall widths tergite 6>5>4>(3,2,head)>collum, ring 12 paranota 1.4 × as wide as prozonite, metatergite ca 2.8 × as wide as long, prefemora not as swollen dorsally, leg 6 tarsus 1.3 × as long as femur and femur longer than prefemur. Metatergite almost completely covered with three transverse rows of ca 10 large, low tubercles, each with small seta near posterior edge. Ring 6 sternite with a few fine setae along anterior edge; leg 6 tab short, without setae; leg 7 tab long, thickened, with brush of stout setae. Ring 7 sternite with paired paramedian brushes of fine setae just posterior to gonopod aperture.

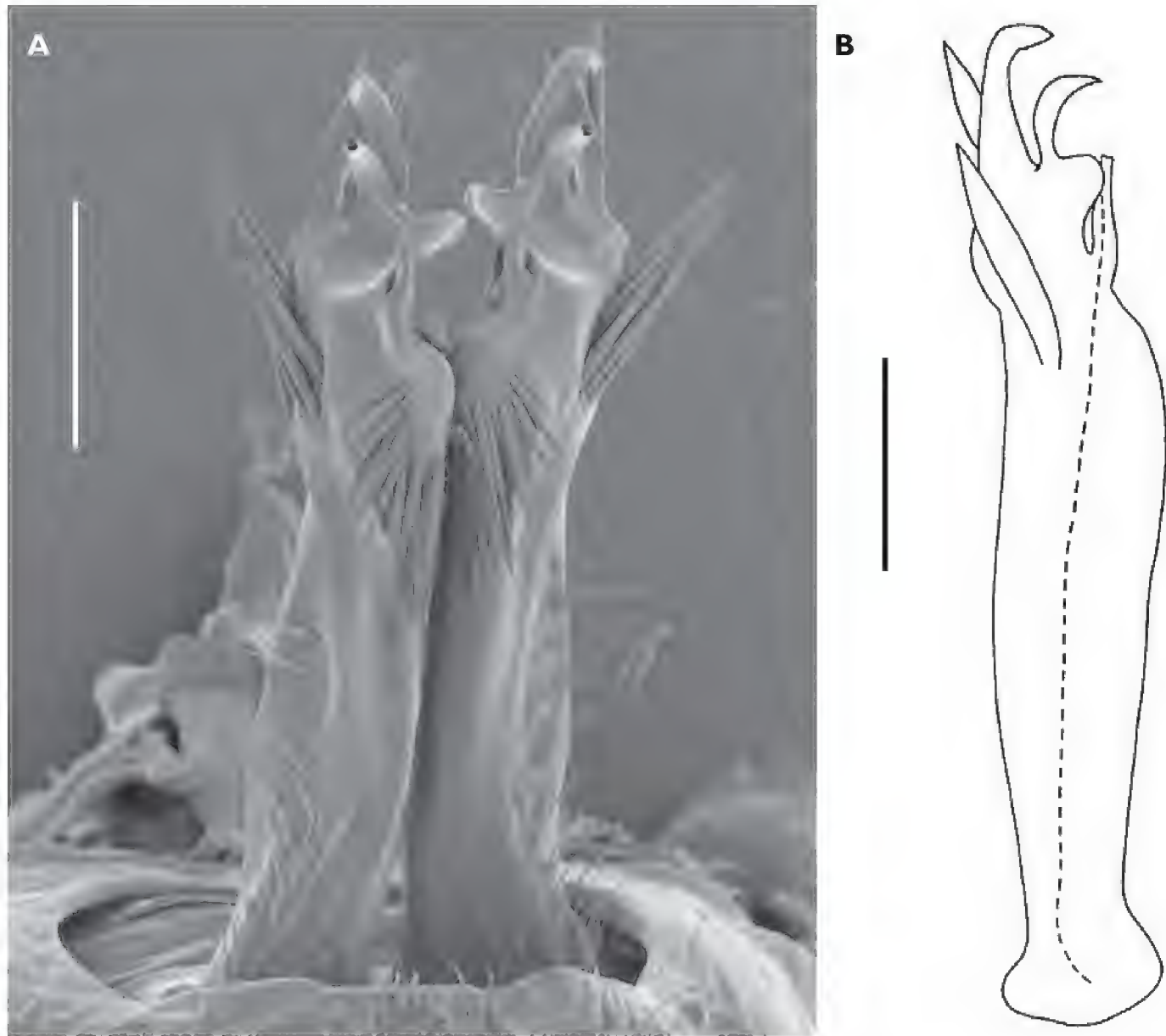


Figure 16. *Tasmaniosoma fragile* sp. n., paratype males. **A** Posterior view of gonopods in situ (ex QVM 23:46766) **B** medial view of left gonopod telopodite, setation omitted for clarity (ex QVM 23:46767). Scale bars = 0.2 mm. The 'hole' at the top of each telopodite is the broken-off tip of the distal extension of the central process.

Gonopod telopodite (Fig. 16) straight, slender, slightly narrowed just above base, divided at ca 2/3 telopodite height into four major processes: (a) short, subcylindrical solenomere arising on medial surface and directed distally; (b) blade-like, acute process arising on anteromedial surface just basal to solenomere origin and directed anterodistally; (c) large central process with posterodistally sloping flat surface, extending medially as round-edged, tab-like structure just posterior to solenomere and extending distally as acute, subcylindrical, posteriorly curving structure; (d) long, blade-like, acute, posterolaterally curving process arising just anterolateral to central process. Three tight clusters of stout, rod-like setae: ca 10 arising on lateral surface just basal to solenomere origin and directed distolaterally, 15–20 arising on posterior surface a little basal to lateral cluster and directed posterobasally, and 5–10 arising on anterolateral surface near apex and directed distally. Sparse fine setae running from posterior surface near base anterodistally along lateral surface to ca 1/2 telopodite height. Prostatic groove running on medial surface directly to solenomere base.

Female with legs 2 missing in the three known specimens.

Distribution. Known from six localities over ca 1000 km² in eastern Tasmania up to 630 m elevation, from Mt Allen close to the east coast at Douglas River to ca 10 km east of Campbell Town in the Midlands, and south in the Eastern Tiers to the Swansea area (Fig. 25). Sympatric with *T. armatum*, co-occurs with *T. orientale* sp. n.

Etymology. Latin *fragilis*, “breakable”, adjective. The stout, rod-like setae on the gonopod are usually broken. Females are readily distinguished from those of sympatric, similarly sized *T. armatum* and *T. orientale* sp. n. by the presence of prominent tubercles on *T. fragile* tergites.

***Tasmaniosoma gerdiorivum* sp. n.**

urn:lsid:zoobank.org:act:6333E909-8104-403A-B6C3-50FB376FB357

Fig. 17; map Fig. 26

Holotype. Male, Australia, Tasmania, Weavers Creek area, 41°25'37"S 147°22'16"E (EQ309136) ±100 m, 540 m, 23 March 1995, R. Mesibov, QVM 23:51667.

Paratypes. 6 males, 1 female, details as for holotype, QVM 23:46675; 1 male, 1 female, same details but 41°26'00"S 147°21'55"E (EQ304129) ±100 m, 700 m, 4 August 1994, QVM 23:46667; 3 males, 4 females, same locality but 41°24'09"S 147°22'59"E (EQ319163) ±100 m, 970 m, 8 January 1995, R. Mesibov & T. Moule, QVM 23:46669; 2 males, same details but 41°26'58"S 147°22'47"E (EQ316111) ±100 m, 470 m, 22 March 1995, R. Mesibov, QVM 23:46671; 1 male, same details but 41°27'01"S 147°23'04"E (EQ320110) ±100 m, 530 m, QVM 23:46672; 2 males, same details but 41°27'27"S 147°23'13"E (EQ322102) ±100 m, 440 m, QVM 23:46673; 1 male, same details but 41°26'19"S 147°22'04"E (EQ306123) ±100 m, 710 m, 23 March 1995, QVM 23:46674.

Other material examined. 66 males and 15 females from 39 other sites (see Appendix).

Diagnosis. Metatergites with three weakly developed, transverse rows of low tubercles, gonopod telopodite apex divided into cluster of four processes including broad, flattened solenomere, the most lateral process directed bent laterally.

Description. Male/female approximate measurements: length 10/11 mm, ring 12 paranota width 0.9/1.0 mm. Live colour very pale yellow with sparse, reddish mottling and reticulation on metatergites, mainly along posterior margin, antennae light brown and head pinkish-red dorsally; in alcohol, pale yellowish-brown or completely decoloured.

Male as for *T. armatum* in most non-gonopod details, but overall widths tergite 6 > head > 5 > 4 > (3,2) > collum, antennomere 3 longest, leg 6 tarsus 1.5 × as long as femur, femur longer than prefemur, prefemoral swellings not apparent posterior to ring 11. Ring 12 paranota 1.3 × as wide as prozonite; paranotum with distinct shoulder anteriorly, almost quadrate, lateral margin almost straight; metatergite almost completely covered with three transverse rows of 10–12 large, very low tubercles, each with small seta near posterior edge, but tubercles hard to detect with light microscopy. Ring 6 ster-

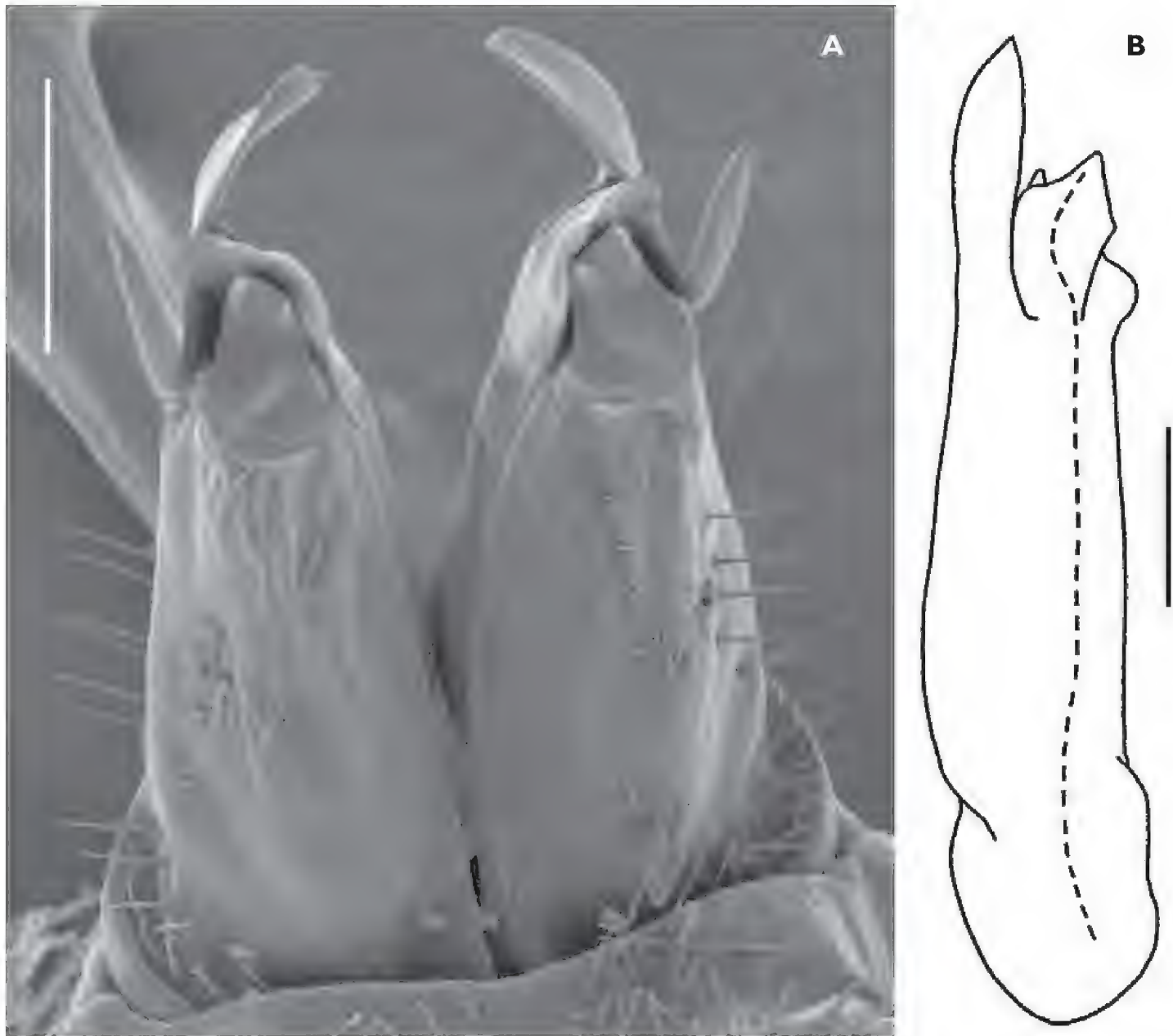


Figure 17. *Tasmaniosoma gerdiorivum* sp. n., paratype males ex QVM 23:46675. **A** Posterior view of gonopods in situ **B** medial view of left gonopod telopodite. Setation not shown in **B** dashed line marks course of prostatic groove. Scale bars = 0.1 mm. In **A**, the bends in the three flattened terminal processes are a preparation artifact; in wet specimens the bent portions seen in (A) are nearly planar.

nite as for *T. armatum* but with marginal band of fine setae along anterior edge of sternite; at high magnification, band is seen to consist of four evenly spaced, loose clusters.

Gonopod telopodite (Fig. 17) straight, stout, slightly flattened anteroposteriorly; base extended posteriorly and laterally as shelf, concave upwards, with thickened margin; anterior surface with gently convex medial extension at ca 1/2 telopodite height. Telopodite divided at ca 3/4 height into four processes: (a) mediolaterally flattened, tab-like solenomere arising medially, the distal edge subtriangular; (b) anteroposteriorly flattened process arising just lateral to solenomere with acute apex and short, shelf-like posterior extension at base; (c) long, blade-like, bluntly acute, mediolaterally flattened anterolateral process; (d) rod-like, acute process arising just anterolateral to anterolateral process. Sparse tract of fine setae running from basal shelf anterodistally to ca 1/2 telopodite height on lateral surface; a few fine setae on posterolateral surface at ca 1/2 telopodite height. Prostatic groove running on medial surface more or less directly to solenomere base and terminating at apex of triangle on distal solenomere edge.

Female with posterior margin of epigynum produced as rectangular process almost as long as posterior margin.

Distribution. Sometimes locally abundant in wet eucalypt and subalpine forest over ca 1500 km² in northeast Tasmania from 80 m to at least 1050 m elevation (Fig. 26). The western limit of this distribution coincides approximately with the biogeographical boundary known as the East Tamar Break (Mesibov 1994, 1997). *T. gerdiorivum* occurs ca 5 km from the sea in the north of its range; it has not yet been found east of Mt Saddleback or south of the North Esk River. It co-occurs with *T. armatum* and *T. clarksonorum* sp. n. in the west of its range, and may be parapatric with *T. cacophonix* sp. n. and *T. decussatum* sp. n. in the east.

A male of *T. gerdiorivum* has been found at Gardners Ridge in north central Tasmania, at least 60 km west of all other known localities. This specimen may be from a translocated population, or it may indicate a natural disjunction in the *T. gerdiorivum* range. A similar northeast-north central disjunction has been found in the distribution of *Lissodesmus devexus* Mesibov 2006 (Mesibov 2006).

Etymology. Latin *gerdius*, “weaver”, + *rivus*, “stream”, noun used as adjective, after the type locality, Weavers Creek.

***Tasmaniosoma hesperium* sp. n.**

urn:lsid:zoobank.org:act:8802E448-74E6-4BB9-8936-E31CDA3132FE

Fig. 18A; map Fig. 24

Holotype. Male, Australia, Tasmania, Mt Hesperus, Alpha Moraine, 43°06'43"S 146°14'22"E (DN380263) ±100 m, 580 m, 28 February 1999, K. Bonham & R. Crookshanks, QVM 23:46600, dissected, in genitalia vials.

Paratype. 1 male, Junction Creek, Western Arthur Plains, Tas, 43°06'21"S 146°16'35"E (DN410270) ±5 km, 7 February 1966, A. Neboiss, QVM 23:46602.

Other material. None known.

Diagnosis. Gonopod telopodite apex divided into four processes, the central flattened process projecting posteriorly between solenomere and lateral process.

Description. Male with ring 12 paranota width ca 1.5 mm. Live colour unknown; in alcohol completely decoloured.

As for *T. armatum* in most non-gonopod details, but overall widths tergite 6>5>(4,2,head)>3>collum, antennomere 3 longest, ring 12 paranota 1.3 × as wide as prozonite, leg 6 tarsus 1.3 × as long as femur and femur longer than prefemur. Ring 2 pit circular with well-defined rim. Three barely detectable transverse rows of large, low tubercles on metatergites; just visible on holotype in lateral view with reflected light, not as well developed as in other *Tasmaniosoma* spp., e.g. *T. hickmanorum* sp. n. Leg 6 sternal tab short with brush of fine setae; no leg 7 tab; no setae on anterior margin of ring 6 sternite.

Gonopod telopodite (Fig. 18A) straight, slightly tapering distally, somewhat flattened mediolaterally, posteriorly with small shelf-like projection at base (concave

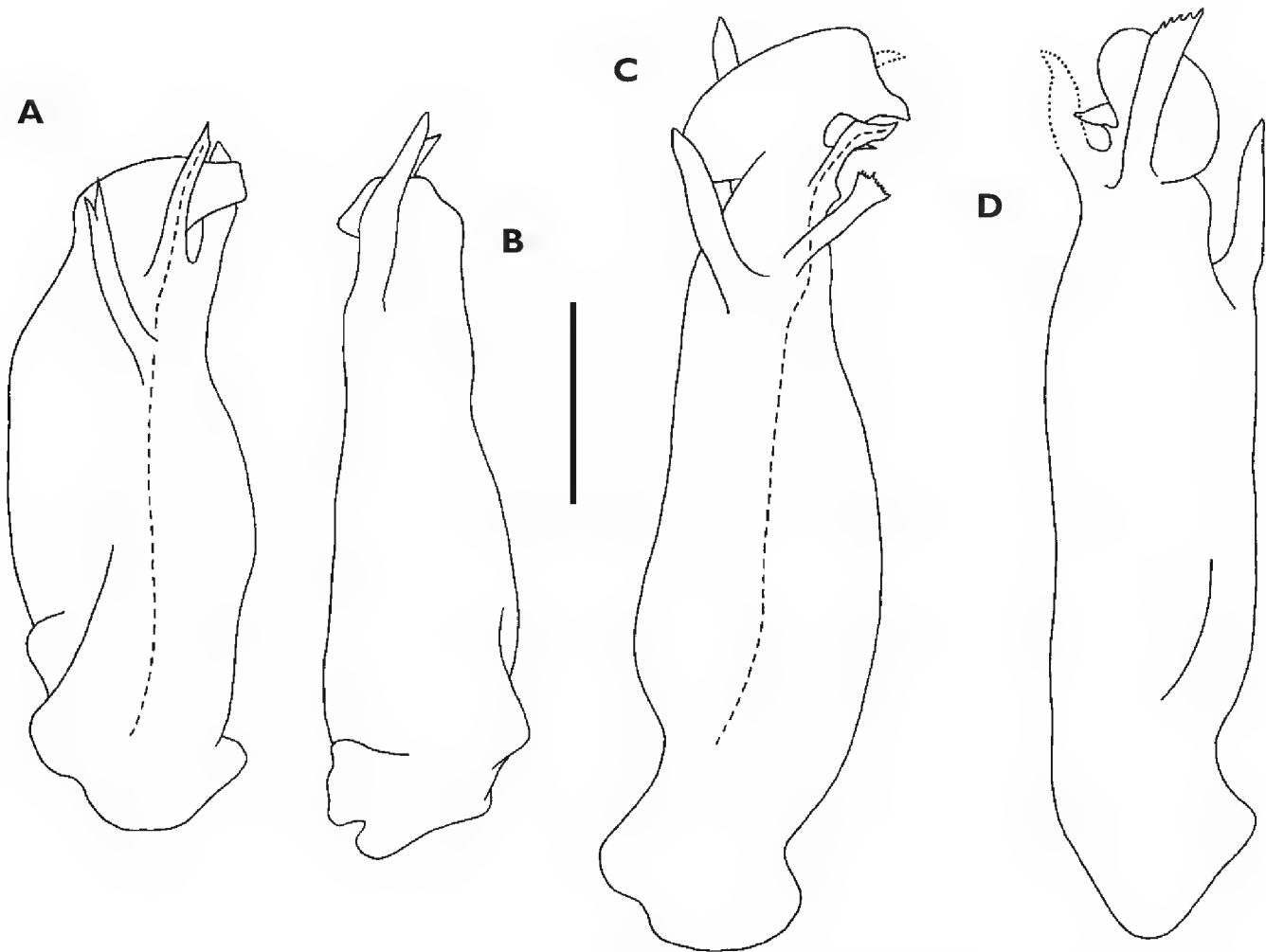


Figure 18. *Tasmaniosoma hesperium* sp. n., paratype male, QVM 23:46602 (**A, B**) and *T. maria* sp. n., paratype male ex QVM 23:46759 (**C, D**). **A** Medial and slightly ventral **B** posterior and slightly lateral **C** medial and **D** anterolateral views of the respective left gonopod telopodites. Setation not shown; dashed lines mark course of prostatic groove. Scale bar = 0.2 mm. Dotted lines in **C** and **D** indicate reconstructed process based on holotype.

upwards), divided at ca $3/4$ telopodite height into cluster of three processes: (a) long posteromedial solenomere, curving slightly laterally; (b) central, broad, mediolaterally flattened process extending posteriorly below solenomere tip; (c) blade-like, acuminate process arising on posterolateral surface close to solenomere origin and directed distally on lateral side of central process. In addition, slender process with forked tip with origin on medial surface at ca $2/3$ telopodite height, basal and slightly anterior to solenomere origin, directed anterodistally. Two tracts of sparse, fine setae: one running from basal shelf anterodistally to end laterally at ca $1/3$ telopodite height, other running distally from base on posteromedial surface to ca $1/2$ telopodite height. Prostatic groove running on medial surface more or less directly to solenomere base.

Female not yet recognised.

Distribution. Known only from two sites less than 5 km apart in the southwest Tasmanian wilderness, ca 40 km south-southeast of Strathgordon (Fig. 24).

Etymology. Latin *hesperius*, “western”, adjective, referring to the names of the two known localities.

Remarks. Very similar to *T. laccobium* sp. n., differing mainly in gonopod details.

***Tasmaniosoma hickmanorum* sp. n.**

urn:lsid:zoobank.org:act:271BC147-2CDE-4392-91E0-F9A5930643F0

Figs 1E, 1I, 5D, 19; map Fig. 23

Holotype. Male, Australia, Tasmania, Mossy Marsh Creek, 42°18'34"S 146°22'44"E (DP487155) ±100 m, 630 m, 18 February 1994, R. Mesibov, QVM 23:51669.

Paratypes. 6 males, details as for holotype, QVM 23:46089; 3 males, Tarraleah, Tas, 42°18'19"S 146°25'52"E (DP530160) ±10 km, May 1952, V.V. Hickman, from dead fern leaves, QVM 23:46042; 1 male, same details but under logs, QVM 23:46043; 8 males, 6 females, same details but 26 December 1952 to 2 January 1953, QVM 23:46044; 5 males, Tarraleah, Tas, 42°18'44"S 146°21'48"E (DP474161) ±100 m, 690 m, 16 April 1992, R. Mesibov, plot 1, QVM 23:46057; 2 males, same details but 42°18'11"S 146°21'48"E (DP474162) ±100 m, 700 m, plot 3, QVM 23:46058; 1 male, 1 female, same details but 42°17'58"S 146°21'48"E (DP474166) ±100 m, 710 m, 18 April 1992, plot 11, QVM 23:46060; 1 male, 1 female, same details but 42°16'27"S 146°21'35"E (DP471194) ±100 m, 750 m, 2 May 1992, plot 47, QVM 23:46065; 1 male, same details but 42°16'21"S 146°21'36"E (DP471196) ±100 m, 760 m, plot 45, QVM 23:46066; 2 males, same details but 3 May 1992, plot 52, QVM 23:51668; 1 male, same details but 42°16'08"S 146°21'40"E (DP472200) ±100 m, 790 m, plot 50, QVM 23:46068; 2 males, same details but 4 May 1992, plot 55, QVM 23:46069; 1 male, same details but 42°16'24"S 146°21'57"E (DP476195) ±100 m, 720 m, 8 May 1992, plot 73, QVM 23:46071.

Other material examined. 154 males, 67 females, 3 stadium VI males and 1 stadium VI female from 120 other sites (see Appendix).

Diagnosis. Metatergites with three transverse rows of large, low, contiguous tubercles; leg 7 sternal tab with dense brush of stout, rod-like setae; gonopod telopodite with central, flattened process notched into three parts, a single comb of long, stout, rod-like, setae on posterior surface, and anteromedial process lying obliquely against central process.

Description. Male/female approximate measurements: length 16/16 mm, ring 12 paranota width 1.7/1.7 mm. Freshly preserved specimens finely mottled or reticulated reddish-brown (Fig. 1E); head reddish above, antennae dark brown, legs pale, reddish distally; prozonite with paired paramedian yellowish patches contrasting with adjoining dark brown patches; metatergites sometimes with paired paramedian, yellowish patches near anterior edge; rings laterally (Fig. 1I) finely mottled reddish-brown with small, pale patch under paranotal margin. In alcohol, pale reddish or decoloured.

Male as for *T. armatum* in most non-gonopod details, but overall widths $6 > 5 > (4, \text{head}) > (3, 2, \text{collum})$, antennomere 3 longest, ring 12 paranota $1.4 \times$ as wide as prozonite, leg 6 tarsus $1.4 \times$ as long as femur. Anterior margin of metatergite smoothly curving into lateral edge of paranota (shoulder less distinct than in *T. armatum*); metatergite almost completely covered with three transverse rows of 10–12 large, low tubercles, each with small seta near posterior edge. Ring 6 sternite (Fig. 5D) with no

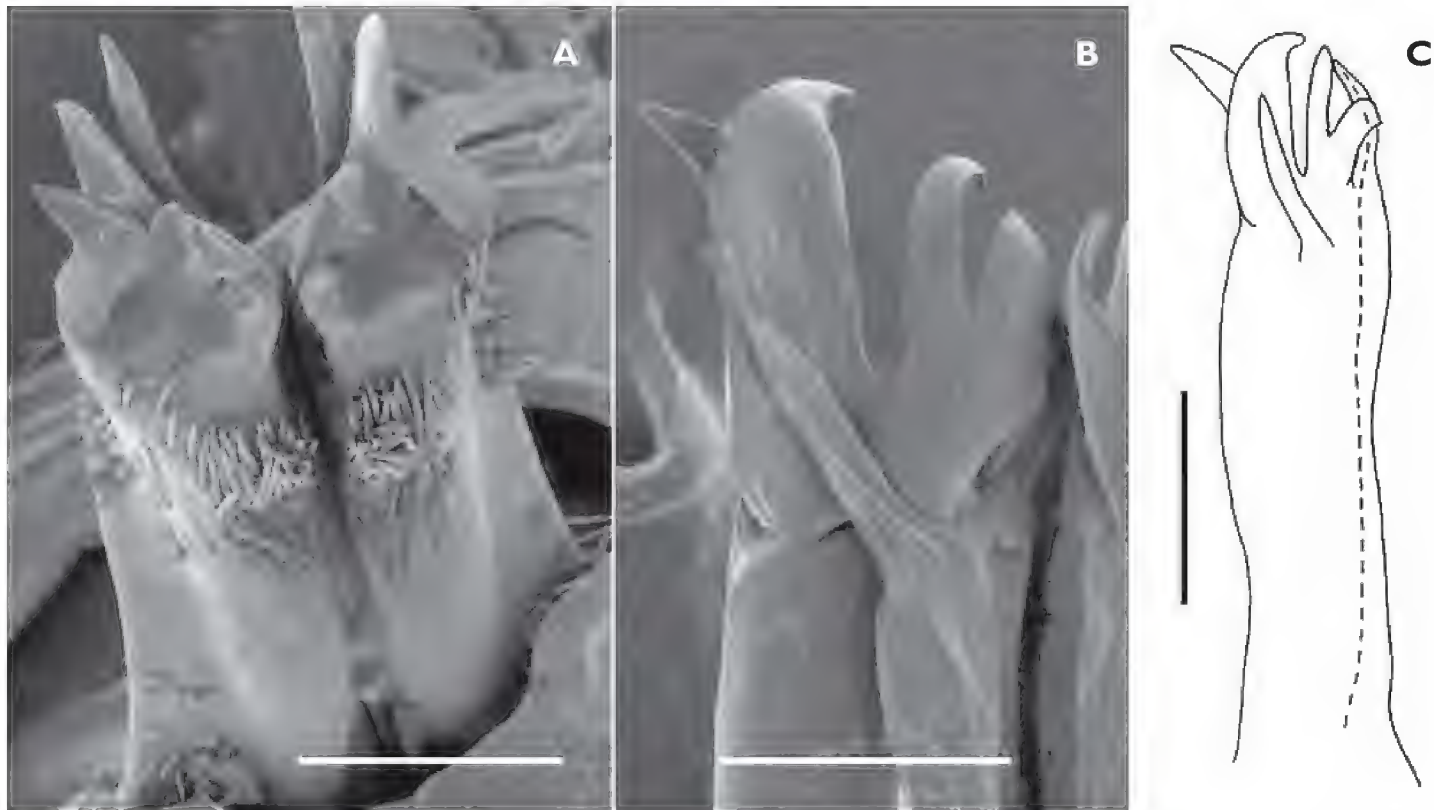


Figure 19. *Tasmaniosoma hickmanorum* sp. n. **A** Posterolateral view of gonopods in situ, voucher male ex QVM 23:46055 **B** anterior view of tip of left gonopod telopodite, paratype male ex QVM 23:46065 **C** anterior view of left gonopod telopodite, paratype male ex QVM 23:46057. Setation not shown in **C** dashed line marks course of prostatic groove. Scale bars: **A**, **C** = 0.2 mm, **B** = 0.1 mm.

leg 6 tab; leg 7 tab long, thickened, with brush of stout setae; anterior margin without setae but with medial notch, about 1/3 width of margin.

Gonopod telopodite (Fig. 19) straight, in cross-section with posterior, anterolateral and anteromedial longitudinal ridges, divided at ca 3/4 telopodite height into tight cluster of four processes: (a) small, slender, acute, medial solenomere, directed distally but curving laterally; (b) large, anteroposteriorly flattened laminate process divided by notches into three acute portions, their lengths decreasing from anteromedial to posterolateral; (c) large, blade-like, acute lateral process curving laterally; (d) blade-like, acute process arising near medial edge of anterior surface, directed distolaterally and closely pressed to anterior surface of laminate process. Sparse group of fine setae near base posterolaterally; ca 20 fine setae laterally from ca 2/3 to ca 3/4 telopodite height; two dense, adjoining clusters of stout, rod-like setae on posterior surface ridge at ca 2/3 telopodite height, the basal cluster of 10–15 setae directed mainly posterobasally, the distal cluster of ca 30 setae directed distally with a few outlying setae in line extending towards base of lateral process. Prostatic groove running along medial surface more or less directly to solenomere base.

Female with sternites as wide as long, legs 2 usually missing (Mesibov, in preparation).

Distribution. Often locally abundant in wet eucalypt forest (with or without a cool temperate rainforest understorey), riparian tea-tree forest and coastal dune scrub over the whole of western Tasmania (ca 28 000 km²), from the northern part of King Island (northwest of the main island of Tasmania) to Melaleuca in the far south, with

an elevation range from sea level to at least 940 m (Fig. 23). Part of the eastern range boundary is congruent with the Mersey Break, a major biogeographical divide in north central Tasmania (Mesibov 1999; species coded as *Tasmaniosoma* sp. 2). *T. hickmanorum* is sympatric with *T. fasciculum* sp. n., broadly parapatric with *T. armatum* along the Mersey Break, and at some localities tightly parapatric with *T. compitale* sp. n. (Mesibov, in preparation), with an overlap zone less than 500 m wide.

T. hickmanorum is remarkably abundant in *Eucalyptus globulus* and *E. nitens* plantations established on sites converted from native forest. I have not yet found it in plantations established on former pasture.

Etymology. In honour of V. V. Hickman (1894–1984) and his son J. L. Hickman (1926–2007), Tasmanian invertebrate zoologists and collectors of this millipede species and many others.

Remarks. This species varies a little in size and colouration over its large range, and in some populations females are smaller than males. Gonopod structure, however, is nearly constant.

Long-preserved, decoloured females of *T. hickmanorum* sp. n. and *T. compitale* cannot be separated. Live and freshly preserved females can be distinguished by colour: *T. hickmanorum* reddish-brown with only a small yellowish patch under paranotal margin (Fig. 1I), *T. compitale* yellowish-brown with a large, prominent yellowish patch just under the paranotal margin (Fig. 1G).

***Tasmaniosoma laccobium* sp. n.**

urn:lsid:zoobank.org:act:12CBDFC1-DC15-400E-9CD6-D03C6A75D359

Fig. 20; map Fig. 24

Holotype. Male, Australia, Tasmania, Lake Sydney, 43°17'15"S 146°36'52"E (DN686070) ±100 m, 690 m, 2 February 1994, R. Mesibov, QVM 23:46601, dissected, in genitalia vials.

Paratypes. 1 stadium VI male, 1 stadium VI female, details as for holotype, QVM 23:51542.

Other material. None known.

Diagnosis. Gonopod telopodite apex divided into four processes, the central flattened process projecting posterobasally below (basal to) solenomere and lateral process.

Description. Male with ring 12 paranota width ca 1.4 mm. Live colour not known; in alcohol decoloured.

As for *T. armatum* in most non-gonopod details, but overall widths tergite 6>5>4>(3,2,head)>collum, antennomere 3 longest, ring 12 paranota 1.25 × as wide as prozonite, leg 6 tarsus 1.4 × as long as femur and femur longer than prefemur. Ring 2 pit circular with well-defined rim. Three barely detectable transverse rows of large, low tubercles on metatergites; just visible on holotype in lateral view with reflected light, not as well developed as in other *Tasmaniosoma* spp., e.g. *T. hickmanorum* sp. n. Leg 6 sternal tab short with brush of fine setae; no leg 7 tab; no setae on anterior margin of ring 6 sternite.

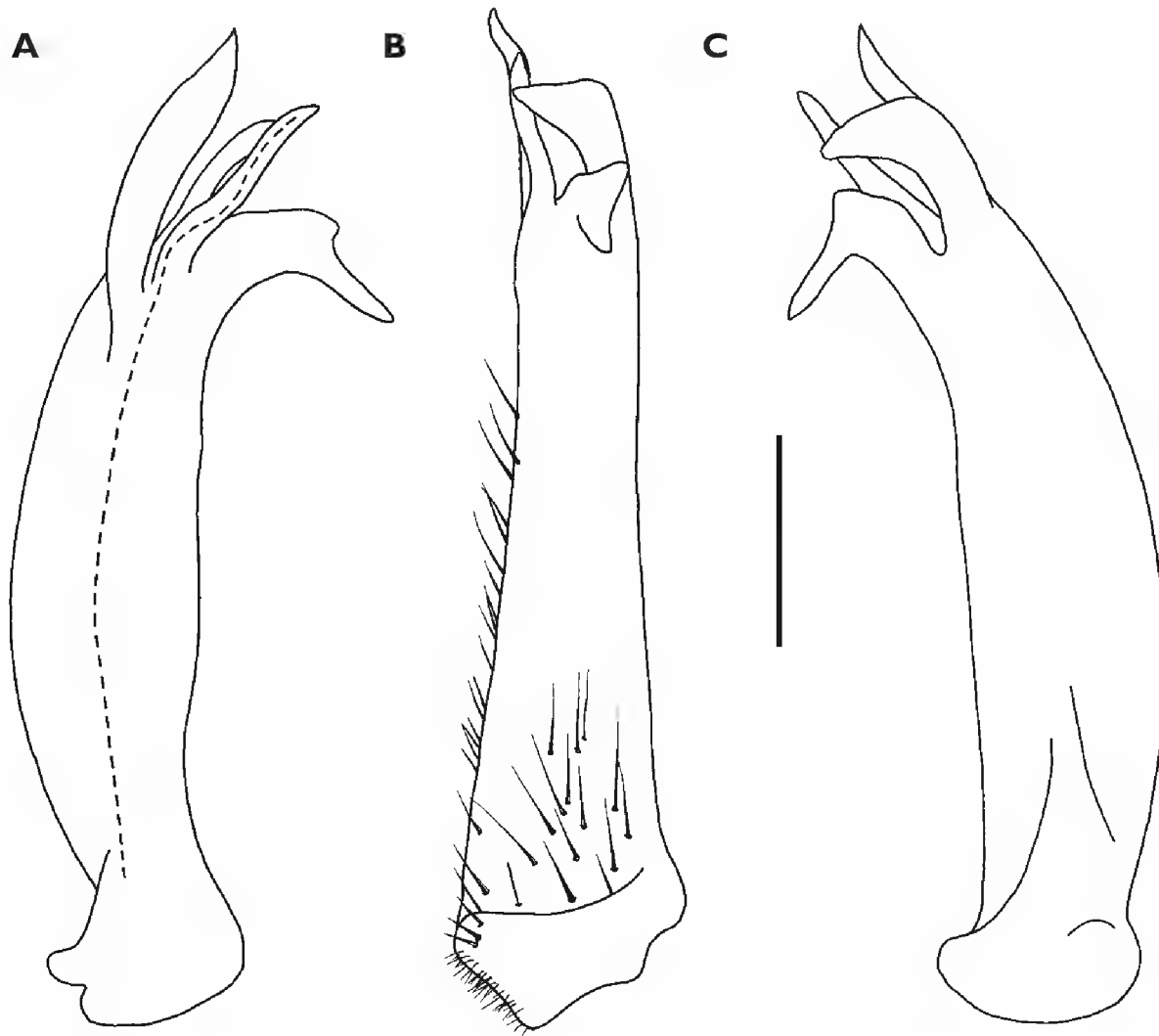


Figure 20. *Tasmaniosoma laccobium* sp. n., male holotype, QVM 23:46601. **A** medial, **B** posterior and **C** lateral and slightly posterior views of left gonopod telopodite. Setation not shown in **A** and **C** dashed line marks course of prostatic groove. Scale bar = 0.2 mm.

Gonopod telopodite (Fig. 20) slender, tapering slightly distally, curved posteriorly, slightly constricted near base, with short, shelf-like basal extension posteriorly. Divided at ca 3/4 telopodite height into tight cluster of four processes: (a) slender, rod-like, slightly sinuous, medial solenomere directed posterodistally; (b) blade-like, mediolaterally flattened, apically acute process arising just anterior and basal to solenomere and curving posteriorly; (c) mediolaterally flattened central process directed posteriorly, the basal portion of the broad apex extending posterobasally as finger-like extension; (d) broad, anteroposteriorly flattened lateral process, the medial corner of wide, truncate apex extending just posterior to solenomere. Two groups of sparse, fine setae: posterobasal group reaching to ca 1/4 telopodite height, and longitudinal medial tract extending from ca 1/4 to ca 2/3 telopodite height. Prostatic groove running on medial surface more or less directly to solenomere base.

Female not yet recognised.

Distribution. So far known only from cool temperate rainforest at the type locality in the mountains of far southern Tasmania (Fig. 24).

Etymology. Greek *lakkos*, “pond”, + *bios*, “life”, noun used as adjective, after the type locality, Lake Sydney.

Remarks. Very similar to *T. hesperium* sp. n., differing mainly in gonopod details.

***Tasmaniosoma maria* sp. n.**

urn:lsid:zoobank.org:act:F33C87DA-B288-4E93-8CA5-C8A744522097

Fig. 18B; map Fig. 24

Holotype. Male, Australia, Tasmania, Maria Island, Four Mile Creek, 42°37'20"S 148°04'11"E (EN876804) ±250 m, 60 m, 14 August 1991, R. Mesibov, QVM 23:46760, dissected, in genitalia vials.

Paratypes. 1 male, 4 females, Pine Hut Creek, Maria Island, Tas, 42°39'25"S 148°05'49"E (EN898765) ±250 m, 20 m, 13 August 1991, R. Mesibov, QVM 23:46759; 1 male, 2 females, Blind Creek, Maria Island, Tas, 42°42'24"S 148°04'42"E (EN882710) ±250 m, 120 m, 15 August 1991, R. Mesibov, QVM 23:46761.

Other material. None known.

Diagnosis. Metatergites without tubercles; ring 6 sternite with discrete setal brushes on anterior margin; gonopod telopodite with stout, rod-like setae in longitudinal tract on posteromedial surface and flattened lateral and medial processes with irregular apical margins on either side of a large, central laminate process.

Description. Male/female approximate measurements: length 16/16 mm, ring 12 paranota width 2.1/1.9 mm. Live colour not known; in alcohol, uniformly pale yellowish brown or decoloured.

Male as for *T. armatum* in most non-gonopod details, but overall widths tergite 6>5>4>3>(2,head)>collum, antennomere 3 longest, ring 12 paranota 1.4 × as wide as prozonite. Ring 6 sternite as for *T. armatum*, but with very short, thin sternal tab by leg 6, not bearing setae.

Gonopod telopodite (Fig. 18B) straight, tapering distally, somewhat constricted just above base, posteriorly thickened as ridge running distally, divided above ca 2/3 telopodite height into cluster of six processes: (a) medial, rod-like, acuminate process directed distally and slightly anteriorly; (b) medial, flattened process with expanded tip and fimbriate distal margin, directed posterodistally; (c) medial, slender solenomere bent posteriorly near tip; (d) large, mediolaterally flattened laminate process with curved margin, broken posteriorly by U-shaped notch, the distal border of notch slightly extended and acute; (e) anterior lateral process rod-like, directed anterolaterally, tip slightly flattened and minutely toothed; (f) posterior lateral process rod-like, acuminate, directed posterodistally. Sparse, fine setae running from base distally on lateral side of posterior ridge to ca 1/3 telopodite height; mid-lateral, longitudinal line of 3–4 fine setae; 30–40 stout, rod-like setae from ca 1/3 to 2/3 telopodite height on posteromedial surface. Prostatic groove running on medial surface more or less directly to solenomere base, curving slightly around base of medial process with fimbriate tip. (Note: Fig. 18B is a reconstruction drawn from a paratype and modified using the holotype. None of the three available males has undamaged gonopods, and the stout, rod-like setae are almost all broken off, detectable only as large setal sockets.)

Female with posterior margin of epigynum raised medially as large, rounded triangle with irregular edge.

Distribution. So far known from eucalypt forest at three localities on North and South Maria Island, with a maximum separation of ca 10 km (Fig. 24). Co-occurs with *T. armatum* at Four Mile Creek, and *T. armatum* has also been collected at Ned Ryans Creek, between the two *T. maria* localities on North Maria Island.

Etymology. Noun in apposition; all known specimens are from Maria Island.

Remarks. The assignment of the Pine Hut Creek and Blind Creek females to *T. maria* is tentative. They are larger than females of sympatric *T. armatum* but are otherwise very similar.

***Tasmaniosoma orientale* sp. n.**

urn:lsid:zoobank.org:act:783D6984-EE76-4BC7-86A8-8C9B883E5C30

Fig. 21; map Fig. 26

Holotype. Male, Australia, Tasmania, Elephant Pass, 41°38'26"S 148°14'32"E (FP034892) ±25 m, 340 m, 20 August 2009, R. Mesibov, QVM 23:51551.

Paratypes. 1 male, Tinmine Creek, Tas, 41°41'55"S 148°11'41"E (EP993828) ±250 m, 530 m, 11 June 1988, R. Mesibov, QVM 23:45991; 1 male, same details but 41°42'08"S 148°12'38"E (FP006824) ±250 m, 450 m, 22 June 1988, QVM 23:46000; 1 female, same details, QVM 23:46001; 1 female, same details but 41°41'33"S 148°10'36"E (EP978835) ±250 m, 550 m, 29 June 1988, QVM 23:46008; 1 male, same details but 41°41'59"S 148°11'15"E (EP987827) ±250 m, 500 m, 30 June 1988, QVM 23:51550.

Other material examined. 37 males and 38 females from 43 other sites (see Appendix).

Diagnosis. Metatergites without tubercles; ring 6 sternite with discrete setal brushes on anterior margin; gonopod telopodite with stout, rod-like setae in longitudinal tract on posteromedial surface and solenomere divided into apically bifid distal branch and distally curved, acuminate basal branch.

Description. Male/female approximate measurements: length 16/16 mm, ring 12 paranota width 1.8/1.8 mm. Male as for *T. armatum* in live colour and most non-gonopod details, but long-preserved specimens completely decoloured, overall widths tergite 6>5>4>3>(2,head)>collum, ring 12 paranota 1.4 × as wide as prozonite. Ring 6 sternite as for *T. armatum*, but with very short, thin sternal tab by leg 6, not bearing setae.

Gonopod telopodite (Fig. 21) similar to that of *T. armatum* (see Fig. 7A), but process 1 simply acute (but see Remarks) rather than Y-shaped; process 2 undivided, curving medially, apically expanded and flattened with dentate margin; distal margin of laminate process not extended posteriorly, instead curving smoothly to posterior extension, the latter shorter and straighter than in *T. armatum*; solenomere divided into distal branch with bifid tip carrying prostatic groove, and basal branch directed posteriorly but curving distally, with pointed tip; process 3 an anteroposteriorly flattened, quadrate tab, the margin free distally apart from central attachment; process 4 as in *T. armatum*; laterally with group of 5–6 setae, rather than three.

Female with posterior margin of epigynum raised in centre as irregularly edged triangle.

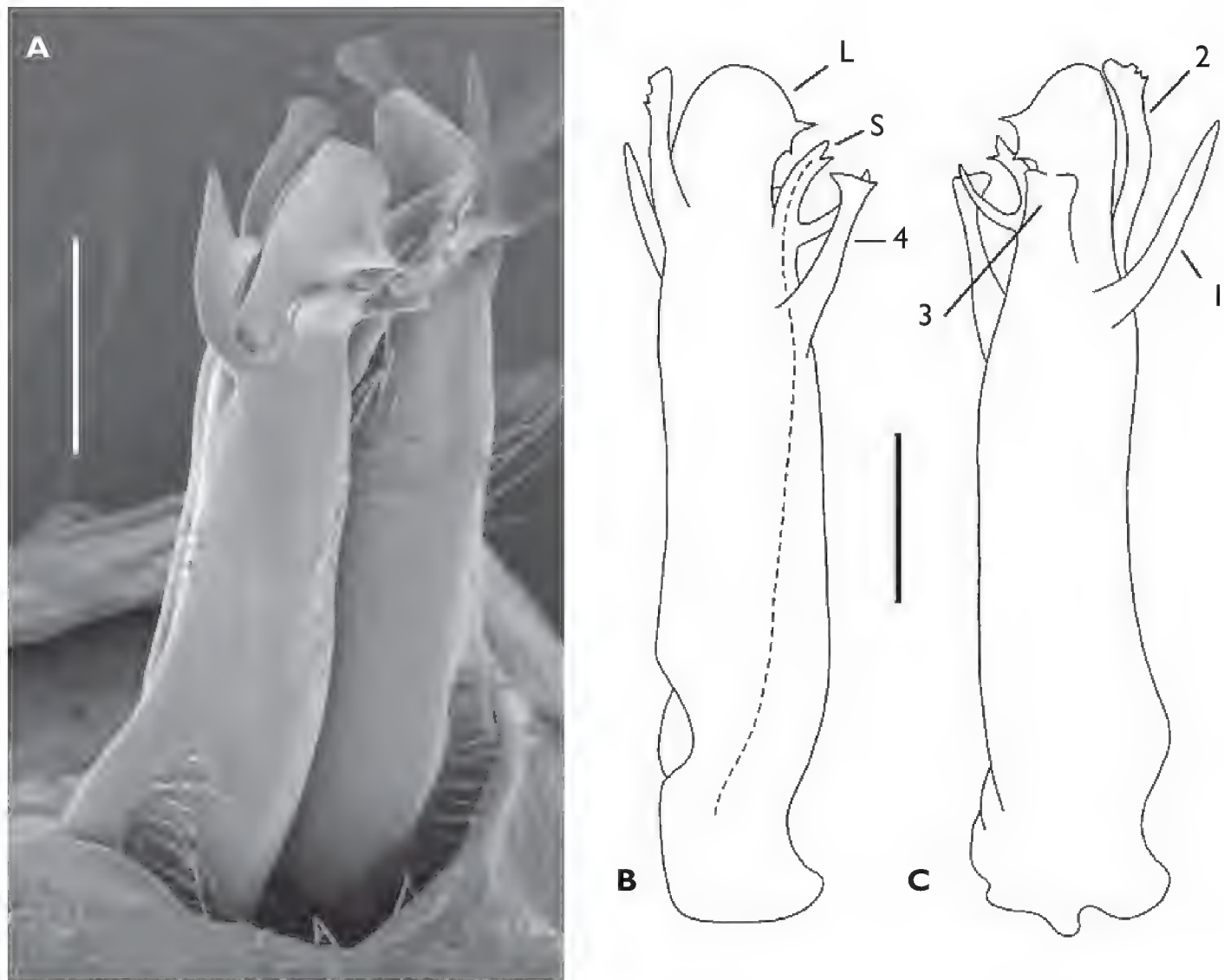


Figure 21. *Tasmaniosoma orientale* sp. n. **A** Posterolateral view of gonopods in situ, voucher male ex QVM 23:46018 **B** medial and **C** posterolateral views of left gonopod telopodite of paratype male ex QVM 23:51550. Setation not shown in **A** and **C**; dashed line marks course of prostatic groove. Processes labelled as in Fig. 7A. Scale bars = 0.2 mm.

Distribution. Common and sometimes locally abundant in dry and wet eucalypt forest over ca 1500 km² in the northern part of the east coast and Eastern Tiers of Tasmania, from near sea level to at least 1000 m elevation (Fig. 26). Not yet found north of Beaumaris or south of Bicheno on the coast, or west of St Pauls Dome in the Fingal Valley. Sympatric with *T. barbatulum* sp. n. and *T. fragile* sp. n.; co-occurs with the latter. *T. orientale* may be parapatric with *T. armatum* in the west and south of its range, and with *T. cacophonix* sp. n. in the north; further sampling is needed to better define the range boundaries of these three species.

Etymology. Latin *orientalis*, “eastern”, for the eastern Tasmanian distribution of this species.

Remarks. The lateral process on the gonopod telopodite (process 1) is simply acute in the holotype and the specimen illustrated in Figs 21B and 21C. In some East Coast males the process is apically forked, as in the right telopodite in Fig. 21A. In the west of the *T. orientale* range, the lateral process is wider and Y-shaped, as in *T. armatum*.

Female *T. orientale* are readily distinguished from those of sympatric, similarly sized *T. fragile* sp. n. by the presence of large tubercles on *T. fragile* tergites.

***Tasmaniosoma warra* sp. n.**

urn:lsid:zoobank.org:act:C2EDE9C4-E146-4F5B-A848-74068E27C92B

Figs 3A, 22; map Fig. 24

Holotype. Male, Australia, Tasmania, Huon River (Manuka Road), 43°05'36"S 146°43'03"E (DN769286) ±100 m, 100 m, 29 April 1997, R. Mesibov, plot 1R4, QVM 23:46037.

Paratypes. 1 male, details as for holotype, QVM 23:46038; 1 female, details as for holotype but 43°05'42"S 146°42'41"E (DN764284) ±100m, 110 m, plot 1R1, 28 April 1997, QVM 23:46587; 1 female, same details but 43°05'49"S 146°42'28"E (DN761282) ±100m, 80 m, 14 May 1997, plot 1M6, QVM 23:46588; 1 male, same details but 43°05'36"S 146°42'45"E (DN765286) ±100m, 130 m, 15 May 1997, plot 1R5, QVM 23:46039; 1 female, same details but 43°05'33"S 146°42'41"E (DN764287) ±100m, 140 m, plot 1R6, QVM 23:46589; 1 female, Huon River (Arve Road), Tas, 43°5'56"S 146°44'45"E (DN792280) ±100m, 170 m, plot 3M4, 20 May 1997, R. Mesibov, QVM 23:46590.

Other material examined. 12 males and 10 females from 16 other sites (see Appendix).

Diagnosis. Metatergites without tubercles; ring 6 sternite with discrete setal brushes on anterior margin; gonopod telopodite with stout, rod-like setae in longitudinal tract on posteromedial surface and two large, upright (distally directed) processes arising anterolaterally near apex, the taller, more lateral one Y-shaped, the more anterior one with broad, minutely dentate apical margin.

Description. Male/female approximate measurements: length 16/16 mm, ring 12 paranota width 1.8/2.2 mm. Male as for *T. armatum* in live colour, colour in alcohol and most non-gonopod details, but overall widths tergite 6>5>4>(3,2,head)>collum, ring 12 paranota 1.3 × as wide as prozonite, 6–7 small setae in transverse rows on mid-body metatergites (Fig. 3A), ozopore opening very close to paranotal margin. Ring 6 sternite as for *T. armatum*, but with paired paramedian brushes of fine setae on anterior margin separated by shallow notch.

Gonopod telopodite (Fig. 22) straight, slightly constricted just above base, with narrow buttress near base on anterolateral surface. Divided between 2/3 and 3/4 telopodite height into five processes (noted here lateral to medial): (a) large, anteroposteriorly flattened process, widely expanded distally, distal margin lower medially and minutely dentate, lateral end of margin broadly acuminate; (b) large, Y-shaped process, flattened anteroposteriorly, divided at ca 2/3 process height, tips roundly acuminate; (c) mediolaterally flattened laminate process, hook-shaped posteriorly; (d) solenomere with slender, distally directed, posteriorly curving distal branch and short, broad, posteriorly directed basal branch; (e) small, slender medial process arising basal to solenomere origin, directed posterodistally, with expanded, truncate tip. Posterodistally directed tract of 20–30 stout, rod-like setae on posteromedial surface from ca 1/3 to 2/3 telopodite height; small group of fine setae on posterolateral surface just above base; longitudinal row of 5–6 fine setae laterally at mid-height on telopodite. Prostatic groove running distally and slightly posteriorly on posteromedial surface to base of solenomere.

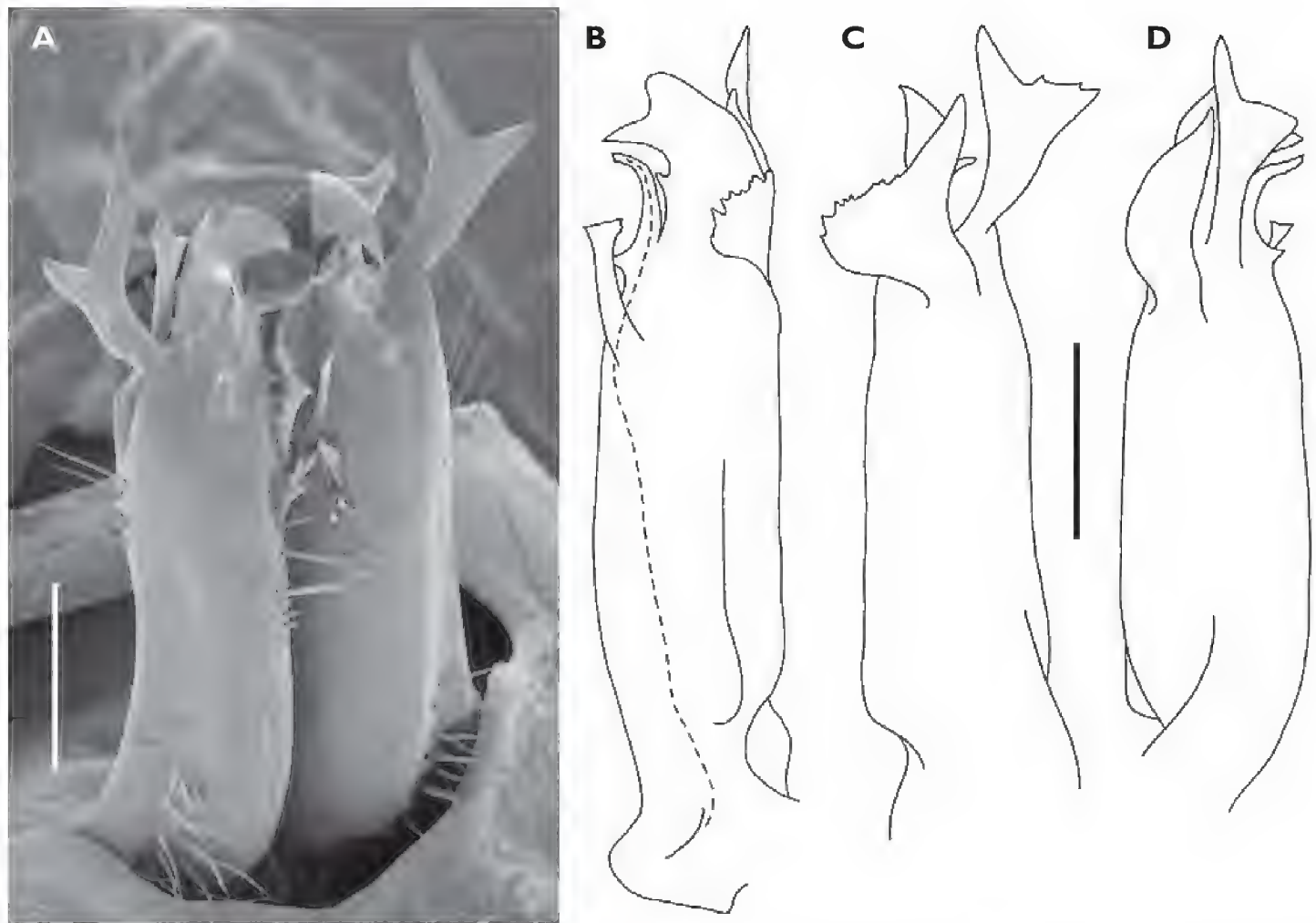


Figure 22. *Tasmaniosoma warra* sp. n., paratype male, QVM 23:46038 **A** and voucher male QVM 23:46040 **B–D**. **A** Right posterolateral view of gonopods in situ **B** medial, **C** anterior and **D** lateral views of right gonopod telopodite. Setation not shown in **B–D**; dashed line marks course of prostatic groove. Scale bars = 0.2 mm.

Female more robust than male; posterior margin of epigynum slightly elevated at both ends and produced medially as small, rounded triangle.

Distribution. Common in wet eucalypt forest (with and without a cool temperate rainforest understorey) over ca 2500 km² on the southeast Tasmanian mainland and on South Bruny Island, from near sea level to at least 370 m (Fig. 24). On the Tasmanian mainland, not yet found more than a few kilometres north of Grove, south of Dover or west of Mt Weld. Co-occurs with *T. bruniense* sp. n. on Bruny Island; possibly parapatric with *T. australe* sp. n., as the two species occur within ca 7 km of each other and have not yet been found together.

Etymology. Noun in apposition, for the type locality in the Warra Long Term Ecological Research (LTER) site in the Southern Forests.

Discussion

Five species groups are recognisable within *Tasmaniosoma* as circumscribed above:

- (1) *alces*, *armatum*, *maria*, *orientale* and *warra*, with nearly uniform red-brown dorsal colouration (likely in the case of *maria*), a gonopod telopodite with a single, lon-

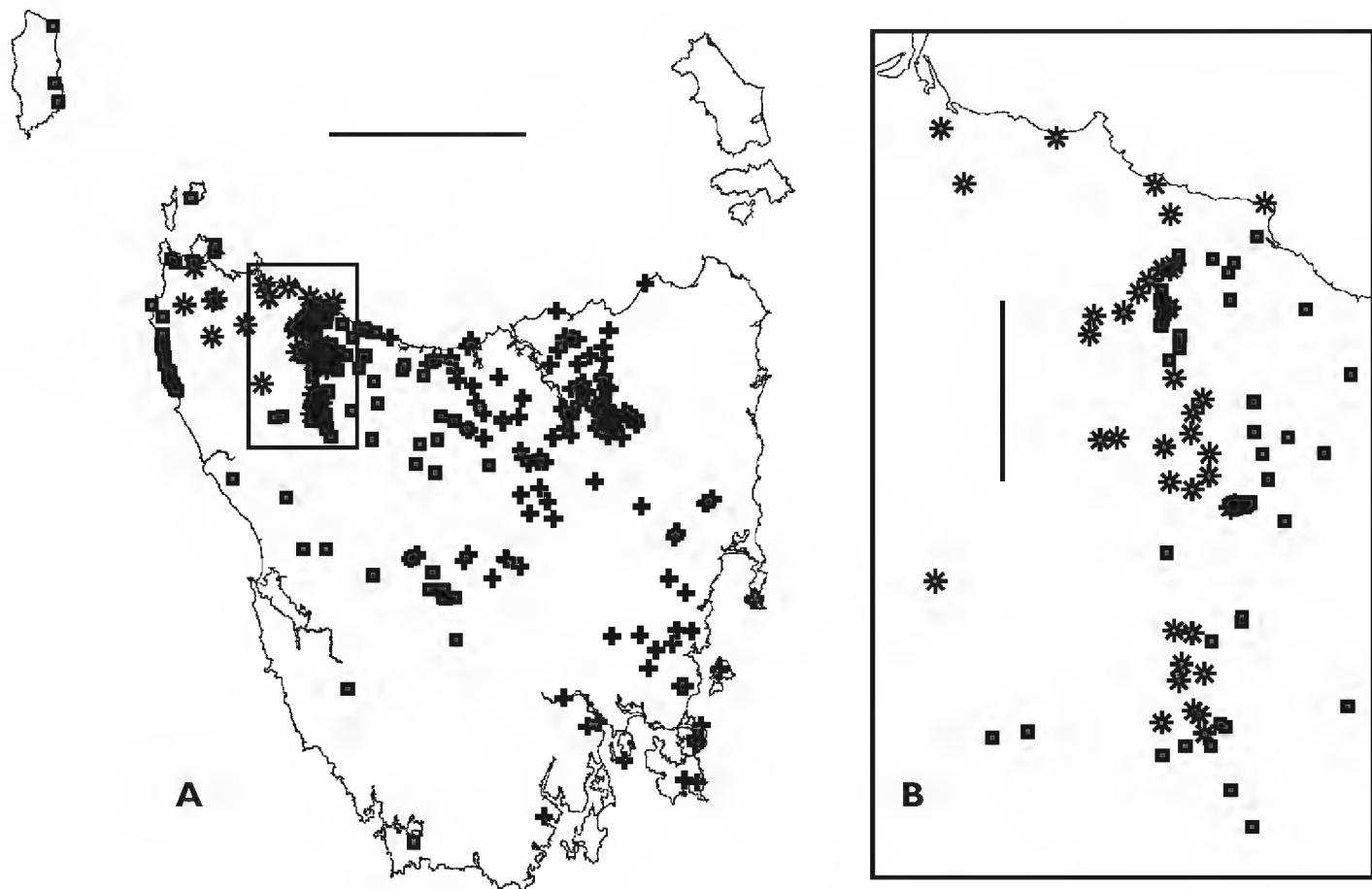


Figure 23. **A** Localities as of 31 January 2010 for *Tasmaniosoma hickmanorum* sp. n. (squares), *T. compitale* sp. n. (stars) and *T. armatum* Verhoeff, 1936 (crosses). Scale bar = 100 km. **B** Preliminary mapping of eastern parapatric boundary between *T. compitale* sp. n. (stars) and *T. hickmanorum* sp. n. (squares). Bounding rectangle as in map (**A**); scale bar = 20 km.

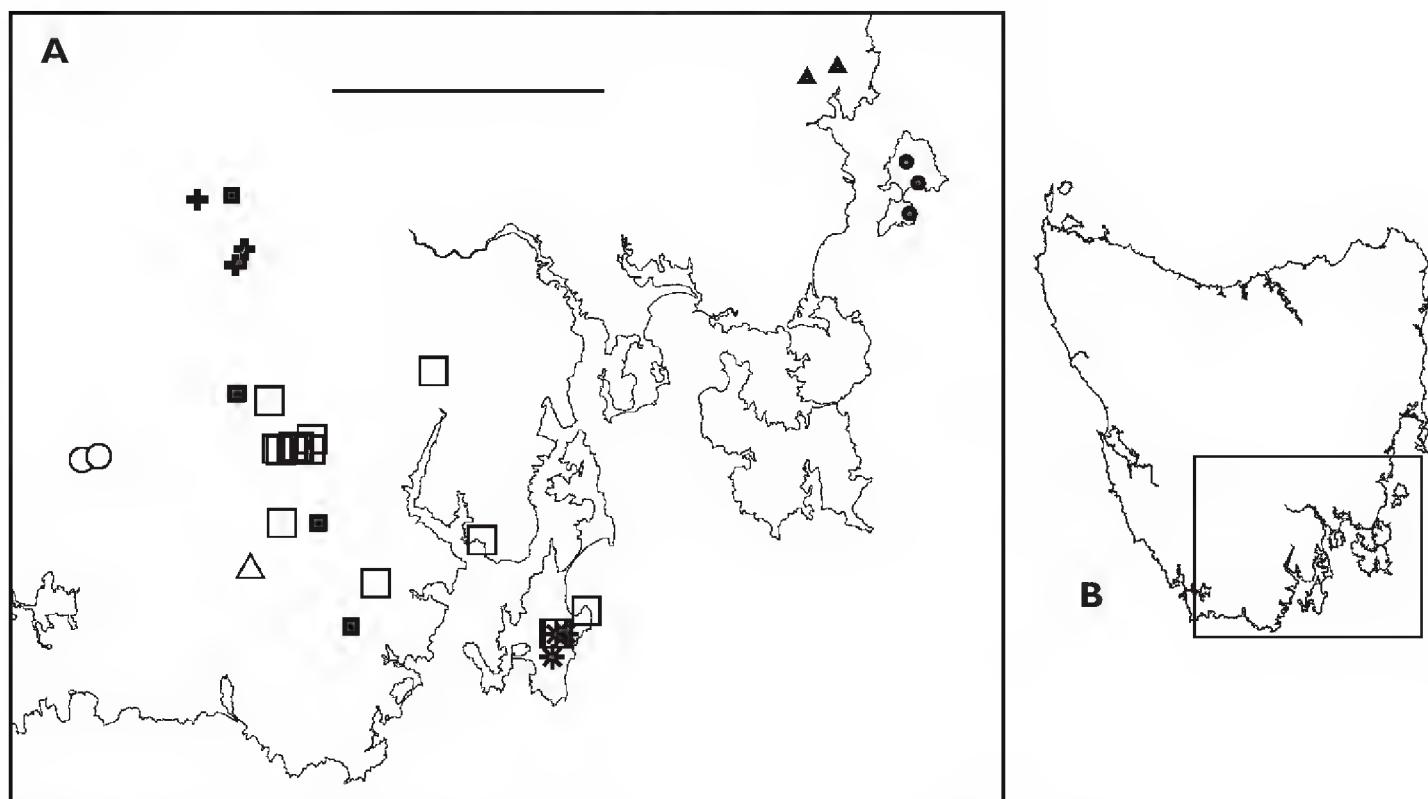


Figure 24. **A** Localities as of 31 January 2010 for *Tasmaniosoma alces* sp. n. (filled triangles), *T. aureorivum* sp. n. (crosses), *T. australe* sp. n. (filled squares), *T. brunense* sp. n. (stars), *T. hesperium* sp. n. (open circles), *T. laccobium* sp. n. (open triangle), *T. maria* sp. n. (filled circles) and *T. warra* sp. n. (open squares). See also Fig. 23. Scale bar = 50 km. **B** Map of Tasmania showing location of main map (rectangle).

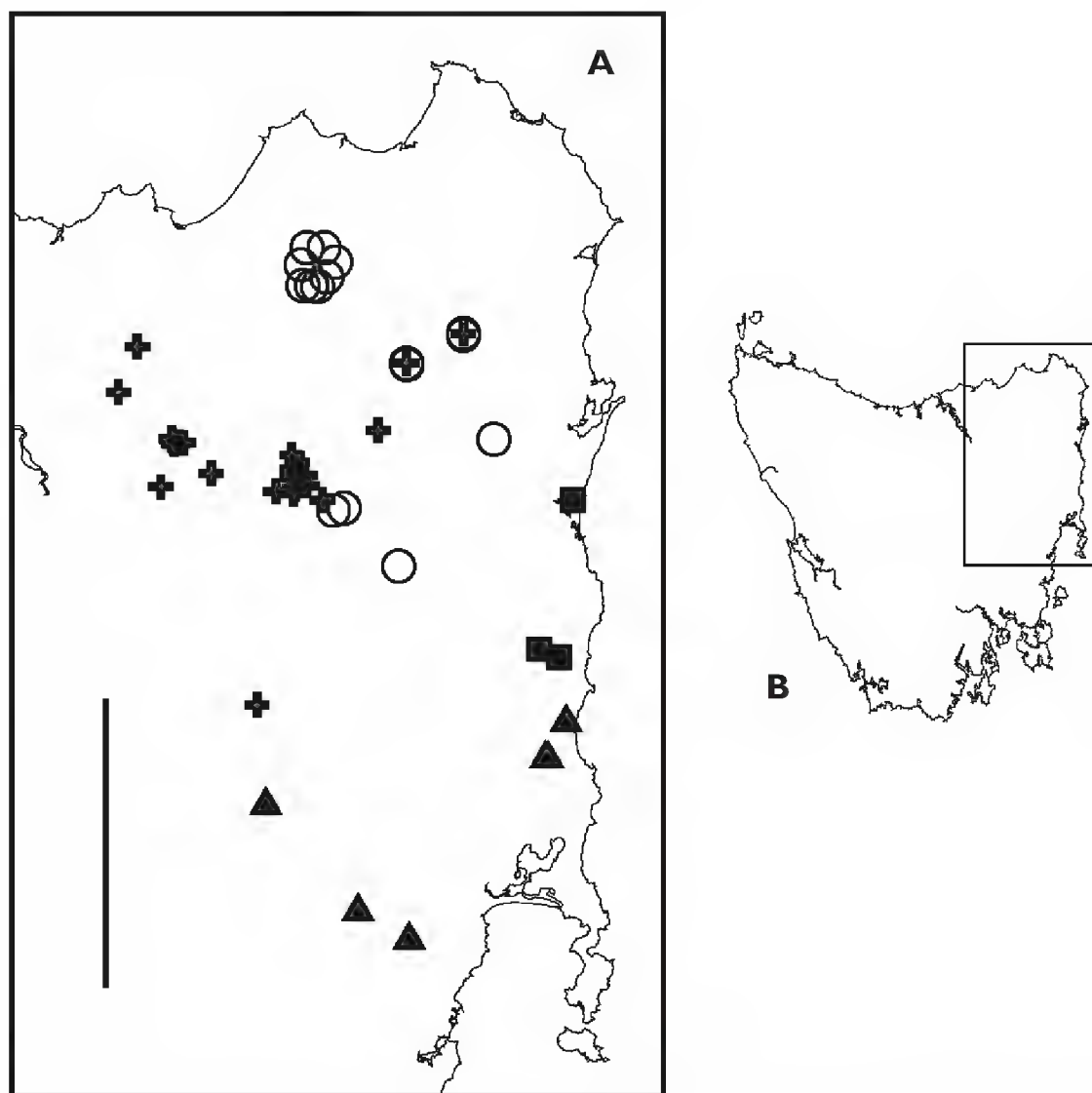


Figure 25. A Localities as of 31 January 2010 for *Tasmaniosoma barbatulum* sp. n. (squares), *T. clarksonorum* sp. n. (crosses), *T. decussatum* sp. n. (open circles) and *T. fragile* sp. n. (triangles). See also Figs 23 and 26. Scale bar = 50 km. **B** Map of Tasmania showing location of main map (rectangle).

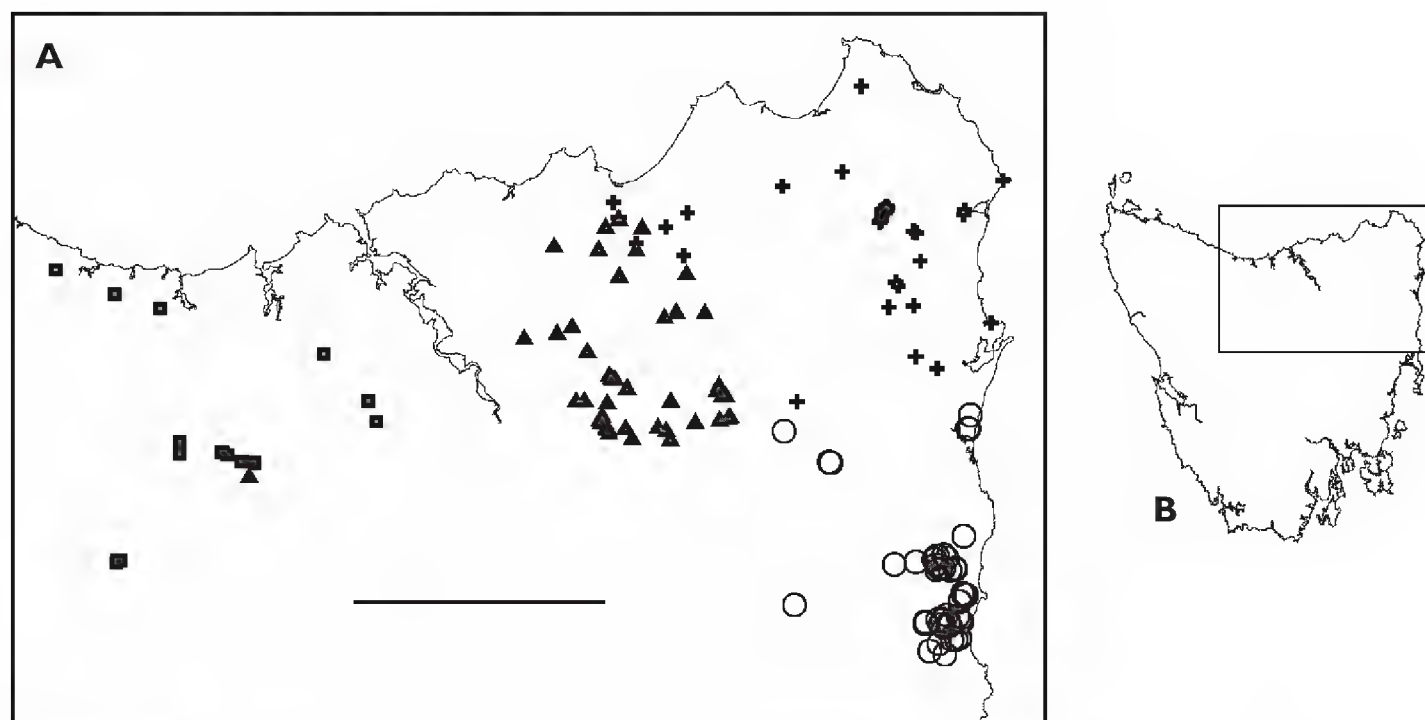


Figure 26. A Localities as of 31 January 2010 for *Tasmaniosoma cacophonix* sp. n. (crosses), *T. fasciculum* sp. n. (squares), *T. gerdiorivum* sp. n. (triangles) and *T. orientale* sp. n. (open circles). See also Fig. 23. Scale bar = 50 km. **B** Map of Tasmania showing location of main map (rectangle).

gitudinal, posteromedial tract of stout, rod-like setae and a particularly arranged cluster of five or six apical processes, and a ring 6 sternite with dense, discrete setal brushes on the anterior margin;

- (2) *clarksonorum*, *compitale*, *fasciculum* and *hickmanorum*, with complex, fugitive, dorsal colouration including paramedian light patches on pro- and metazonites, three transverse rows of well-developed metatergal tubercles, a gonopod telopodite with at least two separate non-longitudinal tracts of stout, rod-like setae, and leg 7 sternal tabs bearing stout, rod-like setae (this group is likely to include *barbatulum* and *fragile*, whose live colour is unknown);
- (3) *australe* and *bruniense*, with a broad, flattened solenomere arising on the lateral side of the apex, small rounded teeth posterolaterally on the paranota, a posterior triangular extension on the male leg 6 prefemur and a distal swelling on the female leg 2 prefemur;
- (4) *hesperium* and *laccobium*, with a particularly arranged cluster of four apical processes on the gonopod telopodite; and
- (5) *decussatum* and *gerdiorivum*, with three transverse rows of weakly developed metatergal tubercles and a gonopod telopodite with a well-defined trough-like 'shelf' basally and a broad, flattened solenomere arising on the medial side of the apex.

Grouping species in this way leaves *T. aureorivum* and *T. cacophonix* as seemingly unrelated isolates. Rather than place 19 species in seven genera, six of them new, I leave *Tasmaniosoma* here as a fairly heterogeneous miscellany.

Another unresolved question is how the type species *T. armatum* Verhoeff, 1936 or any of the other *Tasmaniosoma* species are related to other Australasian H+19 dalodesmid genera. A possible sister taxon to the *clarksonorum* species group is *Icosidesmus* Humbert and de Saussure, 1869. As described by Johns (1964), New Zealand *Icosidesmus* species have long, slightly curved tarsi, low tubercles on metatergites, males with a pit ventrally on either side of ring 2, and a more or less cylindrical telopodite with an apical cluster of small processes and dense clusters of stout, rod-like setae.

Acknowledgements

I began collecting and sorting *Tasmaniosoma* spp. more than 20 years ago and was initially supported in this work by a grant from the Plomley Foundation. I am grateful to Karsten Goemann (University of Tasmania) for assistance in acquiring the SEM images, and to Robert Raven and Owen Seeman (Queensland Museum) and Dennis Black (La Trobe University) for the loan of specimens. I am especially grateful to Jörg Spelda (Staatliche Naturwissenschaftliche Sammlungen Bayerns, München, Germany) for locating and imaging the *T. armatum* syntypes, to Hans Henderickx for Fig. 1 and for images of that specimen's gonopods, and to Kevin Bonham (Hobart, Tasmania), Wade and Lisa Clarkson (Riverside, Tasmania) and

Sarah Tassell (Hobart, Tasmania) for their careful collection and documentation of specimens.

References

- Attems C (1940) Das Tierreich. 70. Polydesmoidea. III. Fam. Polydesmidae, Vanhoefeniidae, Cryptodesmidae, Oniscodesmidae, Sphaerotrichopidae, Peridontodesmidae, Rhachidesmidae, Macellolophidae, Pandiroidesmidae. Walter de Gruyter and Co, Berlin, 577 pp.
- Bonham KJ, Mesibov R, Bashford R (2002) Diversity and abundance of ground-dwelling invertebrates in plantation vs. native forests in Tasmania, Australia. *Forest Ecology and Management* 158: 237–247.
- Cook OF (1896) *Cryptodesmus* and its allies. *Brandtia* 5: 19–28.
- Hoffman RL (1980) [‘1979’] Classification of the Diplopoda. *Muséum d’Histoire Naturelle, Genève*, 237 pp.
- Humbert A, de Saussure H (1869) Description de divers Myriapodes du Musée de Vienne. *Verhandlungen der Kaiserlich-Königlichen Zoologisch-Botanischen Gesellschaft in Wien* 19: 669–692.
- Jeekel CAW (1971) *Nomenclator generum et familiarum Diplopodorum*: a list of the genus and family-group names in the Class Diplopoda from the 10th edition of Linnaeus, 1758, to the end of 1957. *Monografieën van de Nederlandse Entomologische Vereniging* 5: i-xii + 1–412.
- Jeekel CAW (1982) Millipedes from Australia, 4: A new genus and species of the family Dalodesmidae from Australia (Diplopoda, Polydesmida). *Bulletin Zoölogisch Museum, Universiteit van Amsterdam* 9(2): 9–15.
- Jeekel CAW (1983) Millipedes from Australia, 8: A new genus and species of the family Dalodesmidae from Victoria (Diplopoda, Polydesmida). *Bulletin Zoölogisch Museum, Universiteit van Amsterdam* 9(16): 145–151.
- Jeekel CAW (1984) Millipedes from Australia, 7: The identity of the genus *Lissodesmus* Chamberlin, with the description of four new species from Tasmania (Diplopoda, Polydesmida, Dalodesmidae). *Papers and Proceedings of the Royal Society of Tasmania* 118: 85–101.
- Jeekel CAW (1985) Millipedes from Australia, 9: A new polydesmoid millipede from Queensland (Diplopoda, Polydesmida: Dalodesmidae). *Entomologische Berichten (Amsterdam)* 45: 50–55.
- Johns PM (1964) The Sphaerotrichopidae (Diplopoda) of New Zealand. 1. Introduction, revision of some known species and description of new species. *Records of the Canterbury Museum* 8(1): 1–49.
- Mesibov R (1994) Faunal breaks in Tasmania and their significance for invertebrate conservation. *Memoirs of the Queensland Museum* 36(1): 133–136.
- Mesibov R (1997) A zoogeographical singularity at Weavers Creek, Tasmania. *Memoirs of the Museum of Victoria* 56: 563–573.

- Mesibov R (1999) The Mersey Break: an unexplained faunal boundary on the north coast of Tasmania. In: Ponder W, Lunney D (Eds) *The Other 99%. The Conservation and Biodiversity of Invertebrates*. Transactions of the Royal Zoological Society of New South Wales. Royal Zoological Society of New South Wales, Mosman (NSW), 246–252.
- Mesibov R (2004) A new genus of millipedes (Diplopoda: Polydesmida: Dalodesmidae) from Tasmania, Australia with a mosaic distribution. *Zootaxa* 480: 1–23.
- Mesibov R (2005) A new genus of millipede (Diplopoda: Polydesmida: Dalodesmidae) from Tasmania with a pseudo-articulated gonopod telopodite. *Zootaxa* 1064: 39–49.
- Mesibov R (2006) The millipede genus *Lissodesmus* Chamberlin, 1920 (Diplopoda: Polydesmida: Dalodesmidae) from Tasmania and Victoria, with descriptions of a new genus and 24 new species. *Memoirs of Museum Victoria* 62(2): 103–146.
- Nicholls GE (1943) The Phreatoicoidea. *Papers and Proceedings of the Royal Society of Tasmania* 1942: 1–145.
- Pocock RI (1887) On the classification of the Diplopoda. *Annals and Magazine of Natural History* (5) 20: 283–295.
- Verhoeff KW (1936) Die Sphaerotrachopidae der südlichen Halbkugel und ihre Beziehungen. *Zoologischer Anzeiger* 114(1/2): 1–14.

Appendix

Specimen records for the *Tasmaniosoma* species described in this paper. doi:10.3897/zookeys.41.420.app.1.ds.

Note: Specimen records for the *Tasmaniosoma* species described in this paper are available on the ZooKeys website as a Microsoft Excel file (Appendix.xls) and a CSV file (Appendix.csv).

Copyright notice: This dataset is made available under the Open Database License (<http://opendatacommons.org/licenses/odbl/1.0/>). The Open Database License (ODbL) is a license agreement intended to allow users to freely share, modify, and use this Dataset while maintaining this same freedom for others, provided that the original source and author(s) are credited.

Citation: Mesibov R (2010) Specimen records for the *Tasmaniosoma* species described in this paper. doi:10.3897/zookeys.41.420.app.1.ds. Dataset published in: Zookeys 41: 31–80. doi:10.3897/zookeys.41.420.
